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THE

MEDICAL JOURNAL OF AUSTRALIA

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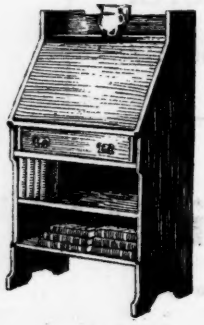

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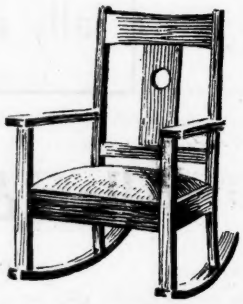

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Table of Contents

PAGE.

ORIGINAL ARTICLES—

"Some Notes on the Diagnosis and Treatment of the Neuroses," by M. C. LIDWILL, M.D., B.S. .. 57

"Deep X-Ray Therapy for Inoperable Malignant Disease," by BEDE J. HARRISON, M.B.. 62

REPORTS OF CASES—

"Two Unusual Acute Abdominal Conditions," by H. K. PORTER, M.B., CH.M. 67

"A Case of Nocturnal Enuresis Presumably Due to Defective Cerebral Development," by JOHN H. ANDERSON, M.D.. 68

REVIEWS—

An Encyclopædia of Medicine 69

ANALYTICAL DEPARTMENT—

Nestlé's Sweetened Condensed Milk 69

A RETROSPECT—

Physiology 71

Biological Chemistry 72

Pathology.. 73

Therapeutics 75

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—

Gynæcology and Obstetrics.. 76

Neurology 77

PAGE.

BRITISH MEDICAL ASSOCIATION NEWS—

Scientific 78

Corrigendum 80

Nominations and Elections 80

PUBLIC HEALTH—

The Control of Health in Victoria 80

NAVAL AND MILITARY—

Appointments.. 82

CORRESPONDENCE—

Spiritual Healing 83

The Tonsils Considered by a General Practitioner 83

Psycho-Therapy 83

PROCEEDINGS OF THE AUSTRALIAN MEDICAL BOARDS—

Queensland 83

BOOKS RECEIVED 84

MEDICAL APPOINTMENTS 84

MEDICAL APPOINTMENTS VACANT, ETC. 84

MEDICAL APPOINTMENTS: IMPORTANT NOTICE 84

DIARY FOR THE MONTH 84

EDITORIAL NOTICES 84

SOME NOTES ON THE DIAGNOSIS AND TREATMENT OF THE NEUROSES.[1]

BY M. C. LIDWILL, M.D., B.S. (MELBOURNE),

Honorary Assistant Physician, Royal Prince Alfred Hospital, Sydney.

THE neuroses that I propose to touch on to-night are only neurasthenia and hysteria.

Neurasthenia.

The symptoms of neurasthenia are vague, such as insomnia, a feeling of ill-being and a floating feeling of anxiety which tends to attach itself to every thought. Together with this all the bodily functions are depressed. This condition may be produced in anyone when there is a condition of worry, mental conflict or when a profound emotion is prolonged. It is produced when the daily expenditure of nervous energy is greater than the daily income. I particularly desire to draw your attention to the fact that the patient is aware of the cause of his trouble and that a profound emotional disturbance is wearing him out. This condition is seen in business men with financial troubles, students at examination times and during grief.

The diagnosis is comparatively easy when any organic change has been excluded by careful examination and a sufficient cause can easily be elicited on careful questioning.

Treatment consists of the removal of the cause, if possible. Secondly, infusion of hope by carefully explaining to the patient that there is nothing organically wrong with him and that he is suffering only from mental pain. Thirdly, change of scene, if possible, to remove the patient from those factors which bring the trouble back to his mind. Fourthly, as the nervous system is hypersensitive, some drug that will damp the nervous system's reaction to stimuli—mental or physical—is required. For this bromides are particularly useful and especially when combined with tincture of *nux vomica*.

I have touched very cursorily on neurasthenia, as the condition is well known to you, but there are two points that I would like to emphasize, firstly, that the condition is brought about when the daily expenditure of nervous energy is greater than the daily income and, secondly, that the patient is generally aware, vaguely or otherwise, of the cause of his trouble.

Hysteria.

We next pass on to hysteria. Time will not permit me to discuss the ætiology of the various symptoms of hysteria, for to do so would drag us into the

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on November 24, 1922.

vortex of modern psychology, many statements of which are more or less under dispute. What I propose to do is to mention some of the cases that have come under my notice, showing the mistakes that have been made in diagnosis and the methods of treatment which have been successful or otherwise.

Before making a diagnosis of hysteria, an exceedingly careful examination must be made of the nervous system, to exclude any organic disease. Where pain is complained of, careful note should be made whether this is of anatomical distribution or not. If the pain has the distribution of a superficial sensory nerve or a root segment, all thought of hysteria must be excluded. If the pain and especially if the hyperæsthesia has a distribution which cannot be accounted for anatomically, then hysteria must be seriously considered.

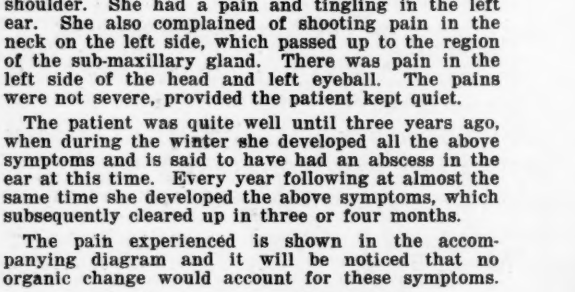
CASE I.—S.A., a female, aged forty-three years, was admitted to hospital complaining of pain in the left hand on the ulnar aspect passing up to the shoulder. She had a pain and tingling in the left ear. She also complained of shooting pain in the neck on the left side, which passed up to the region of the sub-maxillary gland. There was pain in the left side of the head and left eyeball. The pains were not severe, provided the patient kept quiet.

The patient was quite well until three years ago, when during the winter she developed all the above symptoms and is said to have had an abscess in the ear at this time. Every year following at almost the same time she developed the above symptoms, which subsequently cleared up in three or four months.

The pain experienced is shown in the accompanying diagram and it will be noticed that no organic change would account for these symptoms.

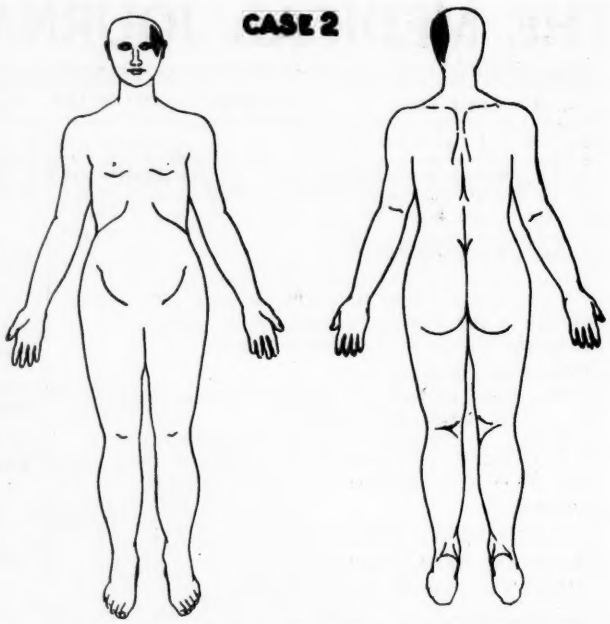
On examination the areas of hyperæsthesia were shown to have no relation to the anatomical distribution of the nerves. Careful examination by two ear specialists showed that there were no signs of ear, nose or throat trouble.

This patient went through the ordinary routine treatment and it was found that hypodermic injections of a few minims of plain water into a painful area would relieve that area for some time. During all this period the patient slept well and, on the suggestion that morphine was being given, five minims of plain water were injected, when the pain was almost entirely relieved for a day or so.



Black Patches Represent Area of Hyperæsthesia.

Black Patches Represent Area of Anæsthesia.



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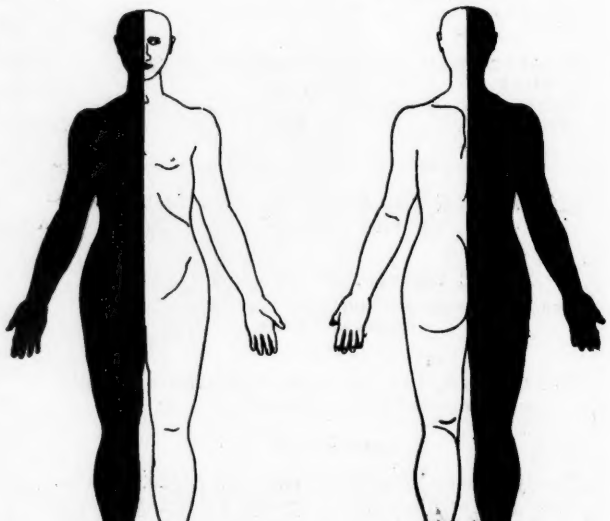


Black Patches Represent Area of Anæsthesia.

CASE II.—Miss A., aged twenty years, complained of intense pain over the left side of the head following on a mastoid operation nine months previously. The headache came on fourteen days after operation and had been more or less continuous ever since. She was seized with fits regularly at 7 p.m., which from description appeared to resemble closely the hysterical *arc de circle*. Her illness was held to be due to cerebral abscess and Dr. Marks was requested to operate for this condition. Before doing so, he asked me to see her.

Examination revealed the following. There was 3.5 dioptres of astigmatism; the discs were normal. There was complete hemianæsthenia of the right side. Her condition was diagnosed as hysteria and she was sent home.

A short time afterwards she returned as bad as ever. When Dr. Marks explained before the patient that if the fits and headaches did not improve immediately, it would be necessary to remove a large portion of her brain and that during this procedure she was exceedingly likely to die, the fits and headache immediately stopped and she left the hospital free from them three weeks afterwards.

Any abnormal reflex, particularly deep reflex, must at once exclude hysteria. The following is an instructive case of a woman with disseminated sclerosis who was thought to be suffering from hysteria:

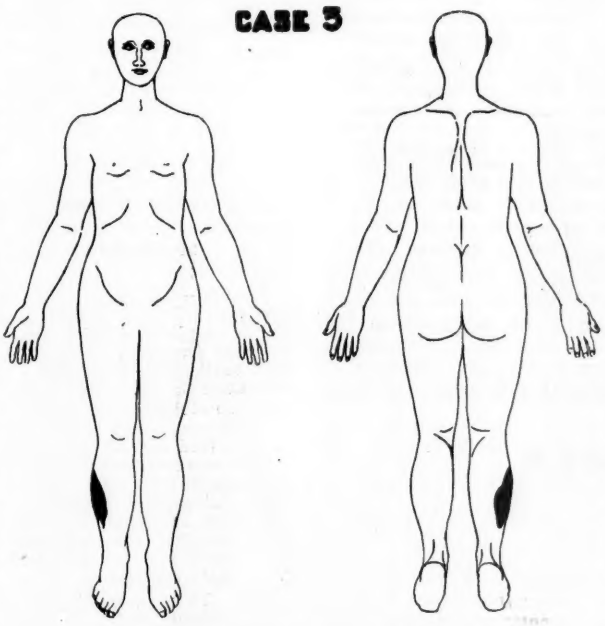
CASE III.—Miss Z., aged thirty-three years, a school mistress, whose condition had been diagnosed as hysteria, was told there was nothing wrong with her. When I saw her she was complaining of inability to hold her water and that she occasionally stumbled.

Examination revealed nothing wrong with the urine, but on cystoscopic examination the left ureter appeared like a golf hole. Examination of the nervous system revealed a patch of anæsthesia on the outer side of the right calf and an absence of the *tendo Achillis* reflex on the right side with the suspicion of Babinski's phenomenon.

On account of the last two objective symptoms hysteria was excluded and a provisional diagnosis of disseminated sclerosis was made, which subsequently was found to be correct.

Dr. Hughes examined her eyes three months later and found retinal changes and optic atrophy.

She died in a mental hospital of disseminated sclerosis about two years later.



Black Patches Represent Area of Hyperæsthesia.

Patchy anæsthesia and hemi-anæsthesia point, in the absence of any other physical signs, in the direction of hysteria. I have noticed that patchy anæsthesia occurs particularly about the extensor surfaces of the forearms and the outer side of the upper arm and this I have found an exceedingly useful manifestation.

Treatment of Hysteria.

We next pass on to the treatment of hysteria. I would here like to make a plea for the more humane treatment of these patients. They are generally treated with great severity by the physician, with the result that they get only temporary relief and their symptoms return sooner or later as bad as ever, but when properly treated they recover completely.

You must bear in mind the cause of hysteria and try and remove it. Hysteria is the result of a repression of profound emotion consequent upon mental conflict in a patient whose nervous system is not strong enough to bear the strain. The repression is so drastic that the emotion is forgotten and the repressed emotion is not connected by the patient in any way with the symptoms. That is to say, he is absolutely unaware of the cause of his trouble. When an emotion is checked from coming out by its proper channel, it is diverted into another and breaks open new channels of expression and thereby causes peculiar symptoms. Until this cause is unearthed and laid bare by the physician, little hope can be entertained with regard to permanent cure. By hypnotism the repression can be increased and sometimes it may come about that the emotion is completely blocked and is unable to ooze out in any way. When this is so, cure results, but it is never as satisfactory as when the cause is laid bare.

I will now cite some cases with the results of the various forms of treatment that I have used:

Treatment by Compulsion.

CASE IV.—M.G., aged twenty years, was admitted on March 8, 1922. She complained that she had been unable to move her left arm for five years and that there was numbness of the same arm. These symptoms had come on in 1916 after a poisoned hand which had been opened by numerous incisions and ever since she had been unable to move her fingers and had complete loss of sensation of heat, cold and pain in the arm. This condition has persisted continuously for five years.

On examination it was difficult to elicit information from her. She was pale and nervous. The left hand was held with finger and thumb in the position of a cone. The hand was swollen from hanging down. Sensation was lost to touch, heat, cold and pain all over the left limb and in a line round the front of the shoulder. Sensation was impaired over the left side, particularly the left breast.

She came under me on May 26, 1922. Psycho-analysis and hypnosis were tried and she resisted this treatment. She was treated with a faradic current and as the current was increased, she was seized with a typical epileptic seizure, during which she bit her tongue and passed her urine in the bed.

By means of a faradic current and massage, the hand improved until about June 10, 1922, the power of the muscles had returned to a slight extent. At this time I ordered that her right arm should be put in splints, so that she would have to do everything with her left arm or starve. At the end of eleven days the power had completely returned and when the splint was removed from her right arm the patient was able to use her left hand for knitting.

On July 1, 1922, all movements of the left arm could be

performed, but some weakness remained. On July 8, 1922, there was complete recovery.

This case looks very satisfactory at first, but the subsequent history of the patient is that a month or so after leaving the hospital some paralysis has returned in her arm and I believe that now she is under treatment for the same.

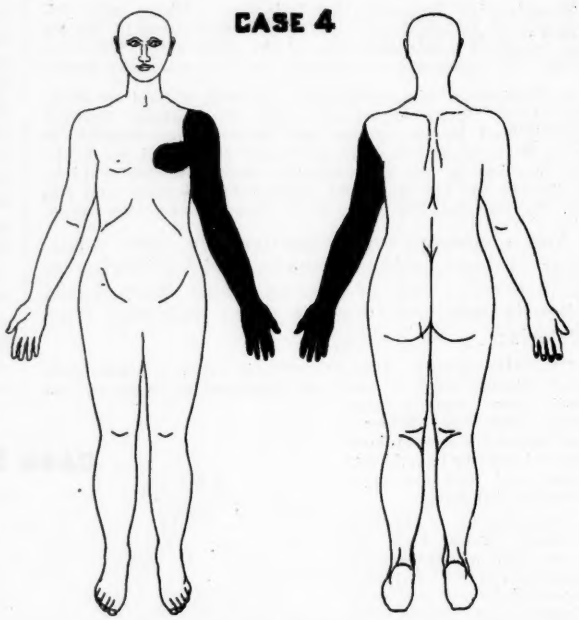
Weir Mitchell Treatment.

This builds up the patient's physical strength and removes him from irritating stimuli and by increasing his strength helps him to fight his battle; but these cases sooner or later relapse. Cases of this form of treatment are so well known to you that I will not cite any of them.

Hypnotism.

As I explained before, hypnotism helps to repress the emotion, sometimes with excellent results, sometimes with temporary results and sometimes with partial or no beneficial result at all. Numbers of hysterics make up their minds not be hypnotized, yet give their consent to be hypnotized and, when this occurs, it is almost impossible to induce hypnosis.

Hypnotism, nevertheless, is a considerable improvement on the two preceding methods, as, when successful, the patient can be made to eat, if necessary, by means of suggestion and so to build up his bodily strength, but it further adds to the repression by bottling up the underlying emotion. If this can be done sufficiently well, the ghost will not come out, but as in so many cases the repressed emotion tends to ooze out, but not so badly as at first, a further course of treatment is often necessary. The following two cases are illustrative of complete cure and partial cure by hypnosis:



Black Patches Represent Area of Anæsthesia.

CASE V.—O.S., aged thirty-three years, was admitted to the Royal Prince Alfred Hospital on October 23, 1921. For a couple of months before admission to hospital she had had frequency of passing water; she was doing very well until seven days before admittance, when during the afternoon she had a convulsion, during which she struggled so violently that it took six people to hold her down. She did not injure herself, but she moaned and talked during that time. The patient has had from twelve to fifteen attacks a day of this nature. Four days after the attacks first started the attacks changed in character. The patient became rigid and shook all over and this lasted for about two minutes. The day before admittance she was struck blind and she has been in a more or less lethargic state ever since.

On examination the patient lay on the bed with dilated pupils, the head turned to the right and she strongly resented any interference.

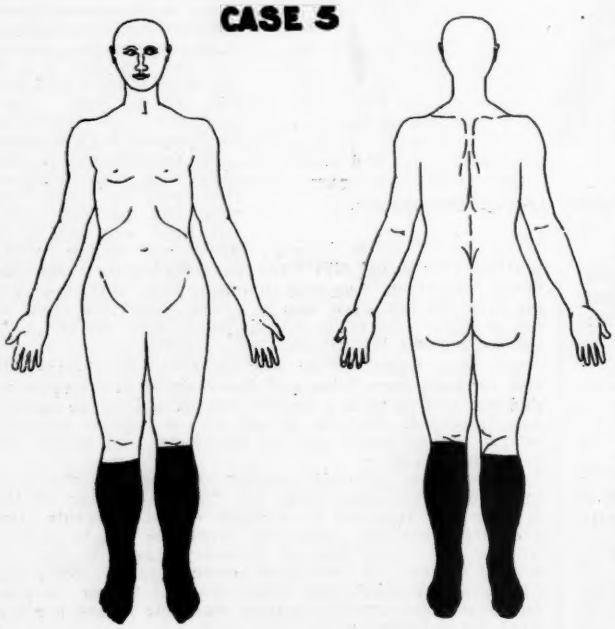
The attacks since she has been in the hospital have consisted in rigidity and opisthotonos which lasted for a few seconds, but consciousness was apparently not lost. The patient was able to move her arms only slightly and with tremor. She had no strength in her hands. She lay rigidly on her back and resisted all effort to alter this position. She was unable to move any part of her lower limbs. Her deep reflexes were all normal.

She had stocking anæsthesia of the legs extending to the knees and generalized hyperæsthesia above this, especially on the right side of the abdomen.

Her condition gradually improved until November 17, 1921. At this time she said that she was still quite blind and unable to walk. On November 23, 1921, she was hypnotized, deep hypnosis being obtained in one minute, and complete return of sight was suggested. Five minutes afterwards she was awakened with complete return of sight.

On November 24 a second hypnotic *séance* was given, with the result that on awakening the patient walked about quite well.

On November 27 she was discharged from hospital; her eyesight was quite good and she had no paralysis



Black Patches Represent Area of Anæsthesia.

and no headaches. A month ago the sister in whose charge she had been, met this woman up at Bell and was informed by her that she has been absolutely well ever since.

CASE VI.—Mrs. S., aged thirty years, was sent to me by Dr. Marks, complaining of loss of weight, anorexia, vomiting, pain in both arms and hands. Her weight was forty kilograms (six stone five pounds). Organic trouble was excluded by careful examination. Hypnosis was immediately started, with the result that the vomiting and anorexia stopped at once. Within two days the patient began to eat well and put on a considerable amount of weight. The hands and arms slowly improved and at the end of a month the patient was well able to move about and to enjoy life.

She was sent to Coogee to stop with friends, but returned in ten days very much shaken and the pains in her arms had returned. It was elicited that there was a steady improvement until two days before her return, when, while sitting with a friend on the rocks, a man cut his throat about twenty yards from her and jumped into the sea. This precipitated a fresh attack of pain in her arm and general nervousness. Hypnosis was again resorted to with a steady improvement in the patient's condition.

The patient left Sydney two months after her arrival, well nourished, with good appetite, happy, but the pains in the arms were not quite gone. A report from her husband six weeks ago stated that Mrs. S. was improving satisfactorily and able to do her house work, but still had some pain in her arms.

You will note in this case that the cure is not quite complete. There remains a certain amount of nervousness and pain. Yet from being an invalid and being bed-ridden, the patient has become a useful member of society.

Breuer Carthatic Method.

This is excellent, as it quickly unmasks the trouble and makes it known to the patient, with cure resulting. I have tried this in several cases and have only succeeded once.

CASE VII.—Miss B., aged seventeen years, was admitted to the Mater Misericordiæ Hospital suffering from spasms of excessive pronation of her left arm, which was drawn close to the left side and a horrified expression on the face. These spasms had been present for some months. Her dreams were of blood.

She was hypnotized two or three times and during hypnosis she was asked to associate about the blood, when she mentioned "little brother Arthur" and "mother." After hypnosis the patient was asked to associate on "blood," "little Arthur" and "mother" and it was elicited that her mother during a fit of drunkennes some eighteen months previously had tried to cut her little brother Arthur's throat while she was in the room. This had been repressed and had become forgotten, yet nevertheless the complex oozed out in this way, so that there was an impulsive acting of the pathogenic scene.

On the discovery of the cause of her trouble the patient was very much upset for a day or two, but, nevertheless, she became quite normal and left the hospital within a week completely cured. For verification of the girl's story inquiries were made and her statement proved to be correct.

Psycho-Analysis.

Psycho-analysis is in all probability the ideal method of treating hysteria, but it is often too cumbersome a weapon to be used. In some cases the underlying conflict is quickly revealed to both the physician and the patient; in others it may take many months. The following is an instructive case:

CASE VIII.—Mrs. M., aged thirty-nine years, was admitted on June 21, 1922. She complained of violent pains in her head and loss of speech for four days. Ten days previously the patient had had a headache and six days after this the pains had become exceedingly violent. This was followed four days before admission by the patient becoming dumb and blind. She had had a feeling of nausea, but no vomiting. The patient looked healthy, but was very nervous and disliked being left alone.

During her period in hospital she had four fits which started with a violent headache and doubtful loss of consciousness. Her eyes were turned to the left and head to the right. There was flaccidity of the arms and spasticity of the legs. She was put on Weir-Mitchell treatment with bromides and chloral.

On June 24, 1922, a lumbar puncture was performed. The fluid was not abnormal and pressure was not increased. Following this she became unconscious. On June 30, 1922, she improved slightly, but was depressed and melancholy. On July 10, 1922, she began to whisper.

On July 25, 1922, she passed under my care, whereupon I proceeded to make a mental analysis. After some hours the following story was elicited: Ten months previously she was seized with a pain in her stomach. She sent for the local doctor, who told her that she was pregnant. Not believing him, she had sent for another medical man, who told her the same, but that the child was dead and that she would have to go to the hospital and have the child removed. When leaving the cab to enter the hospital she gave birth to a macerated Cyclopean monster and, having no one to deliver her, was forced to deliver herself. On seeing this appalling fœtus she was horror struck and proceeded to cry and howl.

I want you to consider the tremendous horror and disgust the giving birth to such a ghoul must conjure up. Consider the haunting visions at night before she can take refuge in sleep. How does she get over her trouble? By not seeing! The whole of vision is dissociated from her consciousness; instinctively as a method of defence vision is repressed. She can see, but will not see. Vision having brought her such a dreadful message, she dare not trust it again. Why does she not speak? Because after the child was born, while she was crying and making a great noise, the nurse spoke particularly severely to her, telling her to keep quiet.

Now, during all periods when we are under the influence of a profound emotion, we are excessively suggestible. The nurse suggested that she should keep quiet, the result being aphonia.

Upon this scene being drawn into the patient's consciousness by analysis, she cried out: "Oh, my God, that child!" and proceeded to tell me all about her trouble between her sobs. I had a quiet talk with her, explaining how her trouble came about. Her sight and voice by this time had completely returned. She wept and sobbed for a couple of days and at the end of this time was a perfectly normal woman.

There are some cases where the social position of the patient and the problems involved in the cure will not allow the physician to overcome the difficulties.

Mrs. X., married, twenty-seven years of age, one child, complained of inability to sleep, of bad dreams, of feeling of a band round the head and that she was going mad. On questioning her we found that she has never cared for men at all. She loved her husband as well as

she could love any man; she detested being kissed or handled by a man, but she loved women and delighted in their kisses and was quite happy in their society. She dreamt of squares into which she put her fingers. She was number three in a family of nine and had always had responsibility removed from her shoulders, because she was informed that her sisters did things better and was brought up with a feeling that she was inferior to her sisters. At the age of twenty odd she married a man, but was disappointed with him because she found out that he was weak and under his father's influence. Shortly after marriage she developed irritability and gradually the above symptoms, inability to sleep, bad dreams, fear of madness, etc., developed and had been getting worse ever since. She obtained relief by excessive amusement, but this relief was only for a few hours; I noticed that she treated her husband like a dog.

This case is exceedingly instructive, as it shows that often the condition of hysteria cannot be cured on account of the complications that may arise during the cure. The removal of the cause may involve the patient in very serious difficulties. This lady was a homo-sexual, but unaware of it and had an inferiority complex. That is, she had imbibed a feeling that she was unable to do things as well as others and so was inferior to them. This was brought about by the suggestion of her elders during childhood.

As Adler has pointed out, these people expect that a husband will provide a sense of security which they are unable to obtain for themselves. When the expectation fails to be realized, the disillusion provides a basis for distrust and antagonism and they attempt to assert superiority by humiliating their husbands.

Now she subsequently marries with the object of securing a mentally strong man upon whom she may rely and finds that she has married a very ordinary man upon whom she cannot rely. The result is that she treats him like a dog. This, added to her homo-sexuality, makes her abhor being fondled by her husband and, to protect herself from this, she developes headache, *et cetera*, the condition of "Do leave me alone! I am not feeling well!" and so avoids the advances of her husband. This condition of affairs is called a protective neurosis. In this case there is only one thing possible. Homo-sexuality is a condition that nothing will cure and the only thing is divorce. This is much too grave a procedure for a medical man to advise and this woman, in my opinion, is better left to work out her own salvation.

Before leaving the subject, I would like to point out that many hysterics do not want to get well, as they find that their neurosis pays. They do not believe that they are making themselves ill for gain and they get over their real feelings by a process of rationalization. Many of these patients are very difficult to treat; they will consent to be hypnotized or undergo a process of mental analysis, but they will resist as much as they can.

Acknowledgement.

I would like to thank Professor Mills, Dr. Gillies and Dr. Marks for allowing me to record the cases of those patients whom I have either seen with them or whom they have sent on to me.

DEEP X-RAY THERAPY FOR INOPERABLE MALIGNANT DISEASE.[1]

BY BEDE J. HARRISON, M.B. (SYDNEY),

Honorary Radiographer, Lewisham Hospital, Royal North Shore Hospital and Mater Misericordiæ Hospital.

IN discussing the physical aspect of deep X-ray therapy at the Bilingual Congress of Radiology and Physio-Therapy in June last, Professor Sidney Russ[1] pointed out that there are three variables which demand our consideration: (*i.*) the radiation itself, (*ii.*) the sensibility of the tumour and (*iii.*) the resistance of the body tissues to the passage of the radiation. In order that the degree of accuracy which has been attained in this, the most physical of the branches of medicine, may be appreciated, it is necessary that these three variables be reviewed.

It is some seventeen years since Professor Dessauer, in his Institute for the Physical Foundation of Medicine at Frankfurt, laid down the principles underlying the thorough treatment of tissues with radiation and it is only during the past seven years, owing to progress in design of X-ray tubes and apparatus, that it has become possible to put these principles into practice and to give an answer, at least partially complete, to the question that if radiation will kill the malignant cell, why is it not made to do so?

Radiation will kill the malignant cell if the dosage which the cell receives is the lethal one. This is just as true as that an antiseptic will kill a micro-organism provided that it receives a sufficient dose. It has been determined by different experimenters, Wintz and Seitz on the one hand and Kroenig and Friedrich[2] on the other, that the lethal dose of radiation for cells varies with the nature of the cell. The actual figures of various experimenters differ somewhat, but all present a very similar relationship. They range for sarcoma cells from 50% to 70% of the erythema skin dose and for carcinoma cells from 90% to 120% of the erythema skin dose. This fixes the second of the variables to which Professor Russ referred. The same investigators and others determined that the radio-absorptive coefficient for human tissues is, at the voltages now employed, the same as that of water. The reason for this is probably the fact that the greatest portion of human tissue is made up of elements of low atomic numbers and low densities. This fixes Professor Russ's third variable. The first variable, the radiation itself, can also be definitely fixed, given certain conditions. These are that during treatment the milliampèrage or quantity of current passing through the tube and the voltage or tension of that current, must remain constant. If these are fixed, we know that the radiation we deliver to-day is the same as that we delivered yesterday and that we will be able to deliver the same to-morrow. In my own practice this constancy of the radiation is secured by the use of (*i.*) a stabilizer, a device mounted in series with two milliampère meters (two are used that each may serve as a check upon the other), a wonderfully sensitive and accurate instru-

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on November 24, 1922.

ment, which when set for, say, six milliampères always insures, no matter what fluctuations may occur in the line voltage, that six milliampères are passing through a tube. (*ii.*) A sphere gap. This particular type of sphere gap was recently calibrated by Professor Duane, of the Harvard School of Physics, against a laboratory kilo-voltmeter and found to be quite accurate. The details of its construction need not be mentioned here, otherwise than to note that the spheres are 12.5 centimetres in diameter and that the circuit is so arranged that in cases of sparking only a portion of the milliampèrage is allowed to break the gap, so preserving the perfection of the spheres, upon which the accuracy of the gap, as a kilo-voltmeter, depends.

We can fix in this way the first of Professor Russ's variables and so are ready to approach the problem of delivering to a deep-seated malignant tumour the necessary lethal dose. We have here six factors to consider:

(1) Time, which operates in the ordinary arithmetical progression, despite Remer and Witherbee's statement to the contrary.

(2) Milliampèrage, which also operates in arithmetical progression, *i.e.*, ten milliampères for a certain period deliver as much as five milliampères for twice that period.

(3) The focus skin distance. The effect of alteration of this distance is in general that, the further the tube is from the skin, the greater is the percentage which the dose received by a mass situated below the skin, in terms of the dose which the skin receives. This percentage is called the percentage of the depth dose, so that we may say that the greater the focus skin distance the greater the percentage of the depth dose.

(4) Port of entry or area of skin through which the radiation enters the tissues. Here the rule runs that the greater the port of entry up to fifteen centimetres square, the greater the percentage of the depth dose. Increase in the size of the port of entry beyond fifteen centimetres square does not materially affect the percentage of the depth dose in the line of the central ray, though it increases the percentage of the depth dose in areas lateral to the central ray.

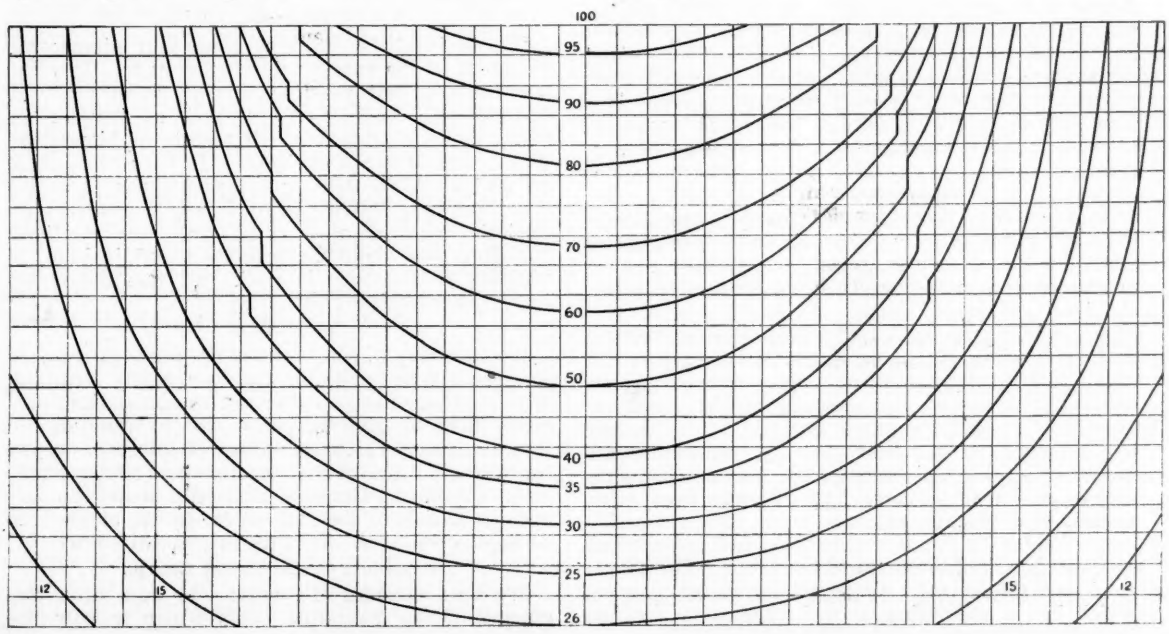
(5) Filtration or the metal or other substance through which the rays must pass before reaching the body. The rule in this case is that up to 1.3 millimetres of copper, the thicker the filter the greater the percentage of the depth dose. Filtration with copper more than 1.3 millimetres in thickness diminishes only the intensity without affecting the percentage of the depth dose in bodies of thickness such as the human frame, that is, to about twenty-five centimetres.

(6) Kilo-voltage maintained at the tube terminals. The rule regarding this is the greater the kilo-voltage the greater the percentage of the depth dose.

There were a number of problems which cropped up in our endeavours to utilize this form of therapy and the most important one was the relationship existing between the times required to deliver an erythema skin dose at varying filtrations and varying kilo-voltages. A working basis in this connexion was found in the following propositions:

(1) From the formula, $eV = hv$, we get $\lambda = \frac{12{,}400}{\text{voltage}}$

(2) Ulsey's formula: λ maximum $\sqrt{\text{voltage}} =$ constant.



DESSAUER CHART OF INTENSITY WITH FOLLOWING SETTINGS.

Voltage Across Tube: 200 Kilo-volts. Filter: 1.3 millimetres of copper and 1 millimetre of Aluminium. Focus-Skin Distance: 50 centimetres. Port of Entry: 20 centimetres.

(3) Hull's formula $(a^3 \lambda^3 0.00658 + 0.14)_o D = \mu$; a = atomic number, λ = wave length in Angström units, D = density, μ = co-efficient of absorption.

These formulæ enable us to use Kaye's tables.

Some charts supplied by Carl Darnell (whether his own or not I cannot say) help to determine the wave length of the radiation, showing the maximum intensity after filtration.

Summing up these factors, we get a graphic representation of the distribution of the intensity of radiation in the tissues ready for actual use in Dessauer's charts, from which we can determine at a glance the dose received at any point of the tissues in terms of the skin dose. We notice that the skin outside the port of entry receives a heavy dose, in some cases as much as 30% at ten centimetres from the port of entry.

A study of these charts makes it apparent that it is impossible to give a carcinoma a lethal dose (90% to 120%) through one port of entry. Its position with regard to the skin determines how many ports of entry are necessary. We actually find that two ports of entry suffice in many cases. When there is a large tumour close to the skin surface, by building up the skin with wax we are able to convert this partially superficial tumour into a deep-seated one and are able to attain a larger dose in it through two ports of entry than we could otherwise do. In some cases the port of entry is approximately a plane surface, but in other cases, such as the neck, it is necessary to build up a very irregular surface into a plane one, in order that advantage may be taken of the information conveyed in these charts. To build up these surfaces I first used wax with a melting point of 43° C. (110° F.), but found the method too cumbersome. To Wrigley's I am indebted for an introduction to gum chicle, which, when added to the wax, gives it a plasticity which renders its use much less objectionable. The irregular surface is covered with waxed paper and over it the "chicled" wax is built up until a plane surface is formed. Wax is used as it has an absorption co-efficient for low values of λ the same as human tissue.

Apparatus.

A closed core transformer is used to energize a Coolidge tube usually with six milliampères at 200,000 volts. It is not advisable to use any greater milliampèrage in hot weather, as on one occasion the heat generated caused the focal spot in one of my Coolidge tubes to wander. The conducting system consists of 1.9 centimetres (three-quarters of an inch) tubing without angles and ending in spheres in place of the ordinary overhead wiring system. The table is made entirely of wood and has attached to it a tube carriage with universal movements. The sphere gap, the two milliampèremeters and the stabilizer have already been mentioned. The diaphragms are made of three millimetre lead with circular apertures and are carried on the tube stand proximal to the filters. The filters used are of specially prepared boronized copper, which has a radio-absorptive homogeneity lacking in ordinary copper.

Protection.

The patient is protected from the bulb itself by the lead glass bowl, two centimetres in thickness. From radiation issuing from the arms of the Coolidge tube he is protected by lead rubber connected with the tube carriage and so arranged that it is always between the arms of the tube and the patient. In cases of oblique radiation the patient is further protected by lead rubber sheets. No patient has yet exhibited any evidence of having received radiation elsewhere than at the ports of entry.

The operator is further protected by two lead walls, each three millimetres in thickness, an ordinary ten centimetres (four inch) wall and two millimetres of steel. There is no need for him to come directly in the line of the rays, because the patient and the tube are observed by means of a mirror which can be seen from the control trolley. I have tested this system and found that approximately six hundred milliampère-hours is just sufficient to fog a tooth film.

The Biological Aspect of Radiation.

It is well that we should open the discussion of the biological aspect of deep X-ray therapy with the remarks of a surgeon. "In a number of cases of cancer," says Sampson Handley, "the efforts of the surgeon, if unsupported by those of the radiologist, would be unavailing and, of course, the converse proposition is true."[3] With this should be considered the remarks of a radiologist, Seitz,[4] who says that the present data are insufficient to determine whether surgery or radiation will produce the better results in cancer of the *cervix uteri*, but at least it is permissible to use the latter alone, and the work of Murphy,[5] in showing that the resistance of mice to transplanted cancer can be increased by the previous administration of a suitable dose of radiation.

Diagnosis.

It is advisable in almost all cases that microscopic diagnosis of the tumour should be made. In some cases this is not possible, as in tumours of the mediastinum, and in others, such as lympho-sarcoma, in which case the evil results of biopsy are well known, it is not advisable. In such cases clinical and even therapeutic evidence must be relied upon, but it is difficult to place any dependence on statistics when microscopy has not been practised. The diagnosis should be complete and include, in addition to the tumour itself, all the metastases and any concomitant pathology.

Localization.

We have here to consider (*a*) the site of the tumour mass, sometimes palpable and then easily localized, at other times not palpable and to be localized definitely only by radiography, and (*b*) the lines of invasion along which the spread of infection occurs, for example, the thirty centimetre (twelve inch) limit of Sampson Handley in cases of breast tumours and the glands of the neck as far as the clavicle, in cases of neoplasms affecting the buccal cavity.

Procedure in Estimating Dosage.

We will consider the particular case of a carcinoma of the ascending colon which is palpable. Two malleable strips of lead are used as a cyrtometer to obtain a model of the outline of the cross-section of the body at the level of the mass. These

are placed on semi-transparent paper and a pencilled tracing made from them. The measurements on the paper are compared with those on the patient by means of obstetrical callipers. The position of the mass is marked on this chart as accurately as possible and Berry's "Atlas of Cross-Section Anatomy" is used as a guide for relative positions. Some five or more points are marked on the tracing, some on the neoplastic mass and some on normal areas. The tracing is then placed over the Dessauer chart, corresponding to the technique one wishes to use, so that the port of entry is lying on the 100 mark of the chart. From the chart the percentage which the marked points each receive, can be seen at a glance; they are noted. The tracing is turned around and the skin of another port of entry is placed on the 100 line of the chart; the percentages of the various marked points are again noted; and so on, until sufficient ports of entry are used to insure that the mass will receive the desired dose. From such a scale it can be seen not only whether the tumour is receiving the proper dose, but also whether any other spot is receiving an overdose.

Care of the Patient.

Before radiation the eliminative processes should be encouraged as in the usual pre-operative treatment, including rest, the free administration of fluid, dietary regimen, *et cetera*. The patient should come to treatment with an empty stomach and with the bowels and bladder evacuated. It is my custom to administer 0.03 gramme (half a grain) of codeine phosphate just before commencing treatment. It seems to lessen the vomiting and certainly increases the patient's mental and physical comfort. The patient's ears are plugged and the eyes covered to lessen the psychic strain, from which these patients are already suffering. A large exhaust fan is kept at work in an open window and this, in conjunction with the high tension coronaless aerials, keeps the room freer of the usual "high tension" atmosphere than would be imagined. It is not uncommon for the patient to be in the room for from three to five hours and the importance of these details will, therefore, be easily realized. In some cases it is necessary, in view of the patient's general condition, to deliver only one-half or one-third of the dose at each of two or three sessions, separated by intervals which allow the patient time to pick up (four or five days). But the best results are attained by massive doses delivered at one *séance*.

Immediate Effects.

When a massive dose is delivered in one *séance*, it is almost invariable for the patient to vomit during the treatment, the degree of vomiting varying considerably among different patients. Immediately after treatment the patient is usually very tired. The skin is cold and moist. The patient looks distressed, complains of weakness and in general resembles a person suffering from the shock of a minor accident. The pulse is not affected so much as might be expected in view of the patient's general condition. In some patients who were very ill, the pulse was actually of better tone after than before treatment. During the twenty-four to forty-eight hours after irradiation the patient experiences gradually diminishing vomiting, nausea and anorexia and in seventy-two hours the malaise and "thick head" have usually disappeared. The patient may now complain of dryness of the mouth or throat with dysphagia or partial aphonia, if the head or neck has been irradiated, or a diarrhœa may appear, if the intestines or liver have been the subject of attack, or rectal and vesical tenesmus, if the pelvis has been treated. These changes have usually disappeared by the eighth day. The skin now exhibits a mild erythema (appearing first on the scar tissue of operation, sometimes as early as the third day) which deepens somewhat during the next week and is followed by a very intense brown discoloration. I have never produced an erythema of the type that Case has described and would feel some alarm if a patient developed such a well-marked erythema in two days. The type I see is rather that depicted in Friedrich and Kroenig's work on radio-therapy. The blood changes which are said by German authorities (Seitz, Wintz, Christen, Glocker) to be severe after massive irradiation, I have not observed, despite the fact that I have treated several patients with well marked secondary anæmia arising from blood loss due to the neoplasm. Case's findings are similar to my own.

The mass itself shows changes which commence as early as the seventh day after treatment, but which sometimes do not appear for a month. In those cases which react favourably, we find that the hæmorrhage lessens; the mass itself becomes smaller, softer and more mobile. Visible malignant ulcers begin for the first time to look clean and healing at the edges soon commences. Above all, the pain, which in several instances has required a constant use of the hypodermic injection of morphine, has either markedly lessened or entirely disappeared. This is the one finding common to all cases. Nearly every patient returns with the same story of great relief and this alone satisfies one that the trouble incurred in administering this type of therapy is well worth while.

Selection of Cases.

The following points need consideration in selecting cases for treatment: (1) The general health of the patient, especially the blood picture; the better these are the more favourable is the outlook. (2) Infection; infected tumours, for example, those of the mouth which have a syphilitic basis, respond unfavourably. (3) Nutrition of the tumour. Impairment in the nutrition of the tumour is an unfavourable change. (4) Location of metastases in bone or liver is unfavourable. (5) Rapidly growing portions of the tumour with active cell proliferation respond more favourably than the less active portions. (6) Basal-celled carcinomata, lympho-sarcomata, metastases, endotheliomata, ovarian, mammary and uterine carcinomata, parotid tumours, teratoid carcinomata of the testis, round-celled, spindle-celled and fibro-sarcomata respond freely. (7) Epithelial carcinomata respond less freely. (8) Periosteal sarcomata are very refractory.

Personal Experiences with Deep Therapy.

Some eighty patients have been treated during the past four months. It is, of course, impossible to

speak of the results or to indulge in generalization from such a small number observed for such a limited time, so I must be content to describe some failures and some successes, as well as some which belong as yet to neither category. It is to be noted *en passant* that Riddell, in England, says that in 30% of cases all evidence of disease had disappeared. In another 52% very great benefit and relief of pain and discomfort follow, while the remainder showed no response. These figures agree very well with those of Holtzknecht, in Germany, with those found by Darnell, in America, and my own cases are running a course which seems to be leading to a similar end.

Results.

Breast Tumours.

Mrs. H. (Coast Hospital) had had malignant disease of the right breast for nine months. The growth had been ulcerating for four months. It had been pronounced inoperable six weeks before treatment had been begun. Before treatment an ulcerating surface extended from near the lateral margin of the sternum into the axilla. It was raised, foul and excruciatingly painful. The patient had to be carried to the table. Cachexia and emaciation were advanced. She was receiving daily hypodermic injections of morphine.

Deep X-ray therapy was started on August 22, 1922. On September 22, 1922, the pain had disappeared. The patient was able to walk into the room. She had had no sedative for several weeks. The ulcer was much cleaner; it was healed except for an area 1.25 centimetres (half an inch) at the edges. She was treated again. The patient has not been seen since, but the report is that progress has ceased. She is to be irradiated once more.

Mrs. H. (Dr. McPhee) had recurrent *carcinoma mammæ* on the left side, in the centre of the scar of breast excision performed in March, 1922. The mass measured seven centimetres by five centimetres, was freely mobile, red, scabbed and painful and there was a large number of small nodules surrounding it. Treatment was started on August 19, 1922. The patient was last seen on November 9, 1922, when the mass had almost entirely disappeared. No nodules were seen. The pain had ceased and the redness and scabbing were no longer present.

Mrs. K. (Dr. Turner) had a fungating mass in the left breast of four years' duration. It measured fourteen centimetres in diameter. There was extreme pain. The patient had had two severe hæmorrhages. The mass was foul. The chest and glands were apparently not involved. She was treated on September 14, 1922. She was last seen on November 15, 1922, when the pain had ceased. No hæmorrhage had occurred since the treatment had been instituted. The surface was clean and had healed to an extent of five centimetres all round.

Rodent Ulcers.

Mr. D. (Dr. Hughes) had a rodent ulcer which had destroyed the right eye and had involved the whole of the outer wall of the orbit and the adjoining portion of the malar bone. The pain was intense and constant. He had been treated by diathermic excision on September 11, 1922. The ulcer had been irradiated on August 25, 1922. The ulcer is quite healed. He is free of pain and an altered man.

It is interesting to note, in view of a recent controversy, that the pain disappeared within a few days after irradiation, while there was as yet no apparent alteration in the ulcer resulting from the diathermy.

Mr. M. had been operated on nine times during the past thirteen years and now has facial paralysis. He has lost an ear, has ankylosis of the mandible and a rodent ulcer extending from his vertex to his neck. There was pain, hæmorrhage, dysphagia, sleeplessness, anorexia and loss of weight. Treatment was given on September 28, 1922. On November 11, 1922, the pain and hæmorrhage had ceased. All that was left of this huge ulcer were two areas each about three centimetres by one centimetre. The patient was putting on weight, as he ate and slept well.

Mr. D. (Dr. Kirkland) had been operated on four times for rodent ulcer involving the orbit. The whole of the inner and lower and the greater part of the upper walls of the orbit had disappeared. There was foul, septic ulceration involving what was left of the orbit and also the turbinals. The septum was still free. He was treated on September 28, 1922. The pain disappeared, but eventually returned and the healing process ceased. On November 17, 1922, I treated the whole surface of the ulcer by diathermy and intend to irradiate him once more when the wound is clean.

Cancer of the Uterus.

Mrs. G. (Coast Hospital) had an inoperable carcinoma of the *cervix uteri*. The uterus had been curetted by Dr. Thring. There was a cauliflower growth of the cervix, with definite infiltration of both broad ligaments. Beyond some relief from pain, no response to radio-therapy has been achieved. The patient is travelling rapidly downhill, in spite of a second irradiation.

Mrs. B. (Dr. Wesley) had a uterine growth which had been pronounced inoperable by Dr. Furber on February 28, 1922. There had been hæmorrhage, discharge, pain, pallor and loss of weight. The uterus was hard, irregular, tender and fixed; both the fornices were infiltrated. Treatment was applied on August 1, 1922. The hæmorrhage has ceased; there is still some pain. The patient has recently gained three kilograms (half a stone) in weight. The uterine body is still large, but is less hard and less tender. The fornices are clear and the body of the uterus exhibits very free mobility.

Mrs. B. had been under the care of Dr. D'Arcy, who reported that a carcinoma of the *corpus uteri* was present, affecting the right lateral border of the uterus, nearer the cervical canal than the fundus. There was a considerable cavity in the mass. She was treated on September 15, 1922. Dr. D'Arcy reported on November 21, 1922, that there was a very great improvement. The area of fixation was so much improved that malignant disease would not be suspected on vaginal examination. The cervix is still to the right. There is an impression with me that the cervix is still further shrunken and that the bands of senile contraction in the vagina are more evident. It may be only as a result of time. She has a mass on the left, apparently fixed to the fundus, which was present on July 28, 1922. It feels like a soft fibroid and is quite free. There is no bleeding nor any blood-stained discharge, even on examination. Her general condition is greatly improved.

Cancer of the Buccal Cavity.

Mr. K. (Dr. McPhee) had malignant disease of the lower lip, which had practically disappeared one month after treatment.

Mr. G. (Coast Hospital) had a recurrent growth in the glands of the neck following removal of cancer of the tonsil eighteen months previously by diathermy. He was treated twice, but went steadily downhill.

Mr. M. (Dr. Kirkland) had malignant disease of the left tonsil involving a soft palate as far as the uvula and enlarged glands of the neck. The patient complained of loss of weight, dyspnœa, anorexia and constant and severe pain. He refused the offer of a surgeon to remove *inter alia* half his mandible. He was treated on October 17, 1922. The patient was present at the meeting and those who saw him, will agree that the disease has practically disappeared.

The cases, apart from those of the four divisions cited, affected one or another almost every organ of the body and gave varying results to treatment. For example, in three patients with gastric malignant disease, no other effects than some relief of pain was obtained. An obstructive carcinoma of the œsophagus has disappeared entirely (clinically and radiologically). A very rapidly progressing fibrosarcoma of the ileo-caecal region has been stayed in its course.

Of the ultimate results it is impossible to judge, but we must agree with Skinner when he says that irradiation surely reduces and sometimes eliminates pain and even in those cases where it does no more, it affords an easy exitus for those unfortunate patients with incurable malignant growth. For the attainment of these results we must give credit to Friedrich, Kroenig, Seitz and Wintz, not so much for the powerful apparatus they devised, as for the introduction of proper scientific methods into problems connected with X-ray dosage.

To attain the ideal in deep X-ray therapy the keenness of the surgeon, the patience of the obstetrician and the wisdom of the physician, combined with a radiological training, are needed. To such a one the work offers unbounded possibilities, but most of us must depend on the cooperation of our fellow practitioners to make up for our own deficiencies. We must, therefore, be careful to range ourselves with those radiologists who insist on keeping "our skirts clear of any suspicion that we are trying to usurp any of the surgeon's well-earned prerogatives."

I feel quite sure that with the cooperation of the surgeons, the physicians and the pathologists, the radiologist will do at least a man's share towards solving the problem of lessening the steadily increasing death-rate from malignant disease.

In regard to deep therapy itself, I would apply the words of Sir Thomas Browne: "A good cause needs not to be patron'd by passion, but can sustain itself upon a temperate dispute."

References.

(1) "Report of the Congress of Radiology and Physio-Therapy," *The British Medical Journal*, June 17, 1922, pages 958 to 960.
(2) Kroenig, B., and Friedrich, W.: "The Principles of Physics and Biology of Radiation Therapy," 1922.
(3) Handley, W. Sampson: "Cancer of the Breast and its Operative Treatment," 1922.
(4) Seitz, L.: *Deutsche Medizinische Wochenschrift*, April 8, 1922.
(5) Nakahara, W., and Murphy, J. B.: *The Journal of Experimental Medicine*, April 1, 1922.

Reports of Cases.

TWO UNUSUAL ACUTE ABDOMINAL CONDITIONS.

BY H. K. PORTER, M.B., CH.M. (SYDNEY),
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CASE I.—A.B., a Hindoo, a saloon waiter on a mail steamer, was admitted to hospital on February 27, 1922, complaining of severe abdominal pain. The history of this patient was difficult to obtain on account of his inability to speak English. It was gathered that he had been ill for three weeks with diarrhœa, but that he had been able to work until the day before admission. The diarrhœa had been accompanied by vomiting and loss of appetite. On being asked where his pain was situated, the patient pointed to his epigastrium and his left hypochrondrium.

Examination on admission showed his breathing to be thoracic in type. The movements of the abdomen were restricted. Tenderness was most noticeable in the epigastrium, though it was present all over the abdomen. Board-like rigidity was present. Rectal examination failed to reveal any abnormality. The chest was apparently normal. The specific gravity of the urine was 1,020; it contained no pus, sugar or blood, but a trace of albumin was present. The leucocyte count was 15,000 to the cubic millimetre. The temperature was 38.3° C. (101° F.), the pulse rate was 120 and the respirations numbered 28.

On February 27, 1922, an incision was made to the right of the middle line above the umbilicus. On opening the peritoneal cavity a large quantity of thick, greenish yellow pus, which was not offensive, escaped in large quantities. The stomach, duodenum and gall bladder were found to be normal. An incision was made over the appendix, pus of the same nature was found, but the appendix was normal. A vertical incision was then made over the left rectus muscle above the level of the umbilicus. The same type of pus was again encountered. The cardiac end of the stomach was normal, but streaming from the left lobe of the liver, in its postero-inferior aspect, was thick, greenish material. The opening in the liver was slightly enlarged and the abscess cavity explored by the finger. The peritoneal cavity was swabbed out and a drainage tube inserted into the abscess cavity through the last incision. The abdomen was closed with chromacized catgut and iodized silk. The temperature fell to normal and the patient made an uninterrupted recovery. The drainage tubes were removed on March 7, 1922.

On February 29, 1922, the patient vomited a large *Ascaris lumbricoides*. No amœbæ were found in the pus from the peritoneal cavity or in the stools which were submitted to examination on two occasions. A course of emetine hydrochloride (0.03 gramme, *id est*, half a grain) was given twice a day for three weeks. The patient was discharged from hospital on April 6, 1922.

The points of interest in this case are:

1. The difficulty in diagnosis before operation.
2. The apparent low virulence of the pus, which was probably necrotic liver tissue.
3. The absence of amœbæ from both the pus and the stools.

CASE II.—R.G., a clerk, was admitted to hospital on July 15, 1922, with a history of having been seized while returning from work about ten hours previously with violent pain ih the upper part of the abdomen. The pain gradually got easier, but returned soon with renewed violence, especially in the region of the umbilicus. He had had no vomiting and the bowels had been opened soon after the attack started. There was no history of previous similar attacks and no history of dyspepsia. The temperature was 36.8° C. (98.2° F.) the pulse-rate was 100 and the respirations numbered 24.

Examination on admission showed the patient to have the thoracic type of breathing. He lay with his legs drawn up. There were no abdominal movements. The patient was collapsed. Tenderness was present over McBurney's point, but not elsewhere. The whole abdominal wall was rigid. Examination of the chest failed to reveal any abnormality. The urine was acid, its specific gravity was 1,020 and no pus, blood nor albumin were present. The pupils were equal and reacted to light and accommodation. The leucocytes numbered 15,200 to the cubic millimetre. A diagnosis of either a ruptured appendix or a ruptured gastric ulcer was made.

An incision over the right rectus muscle above the umbilicus was made. The stomach, duodenum, gall bladder, liver and pancreas were explored through this and through a similar incision on the left side. No abnormality was detected. A large amount of brownish, fæcal-smelling fluid escaped from both incisions. An incision was made over McBurney's point; the same type of fluid was encountered and the appendix, which was slightly congested, was removed. An incision was then made in the middle line above the pubes and a large amount of foul-smelling fluid found in the pelvis. The intestine was then searched from end to end and no lesion other than congestion discovered. The peritoneal cavity was swabbed out and drainage tubes were inserted, one in the last incision and one in the right flank.

The patient recovered from the effects of the operation. The tubes were shortened from time to time and eventually removed. There was an intermittent fever lasting for a few weeks, but its cause was not definitely ascertained. It seemed as though the patient were trying to develope a sub-phrenic abscess. He was discharged on September 17, 1922.

Unfortunately, the fluid from the abdomen was not examined pathologically. The sputum ten days after operation contained staphylococci, streptococci, *Bacilli catarrhalis* and pneumococci, but no tubercle bacilli.

In discussing the nature of this condition, it is important to remember that failure to establish a diagnosis is rare

when a complete examination has been undertaken by hæmatological methods and by biopsy. Failure to arrive at an accurate diagnosis after a complete autopsy has been performed is still rarer, although instances of this have been reported. The cause of the pathological condition in the patient's abdomen may safely be regarded as not having originated in the peritoneal cavity. The signs found were those of peritoneal irritation and were not sufficiently severe to have been the causative factor. Gastric and duodenal ulcers were excluded. It would be necessary in all similar cases to exclude all conditions arising in the lumen of the bowel, such as enteric fever, dysentery and the like and to undertake complete investigation by hæmatological and biological methods and by complete investigation of the renal system.

Acknowledgements.

I am indebted to Dr. Howard Bullock, who performed both operations, for permission to publish the histories of these patients.

A CASE OF NOCTURNAL ENURESIS PRESUMABLY DUE TO DEFECTIVE CEREBRAL DEVELOPMENT.

BY JOHN H. ANDERSON, M.D.,

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THE excuse for publishing this case is the fact that so much misconception and haziness exists as to the value of a psycho-neurological examination in ordinary clinical work.

History.

A.B., female, aged six years, was first brought to the Children's Hospital in 1920 and her disability was given as being "backwardness and wetting the bed at night." The patient was a fine, well-developed child, but exhibited all the signs of nasal obstruction. An examination of the pharynx disclosed grossly enlarged tonsils and adenoids. The mother stated that the child's birth had been easy, that she had had a normal teething, had walked well at eighteen months, but had not spoken till she was five years of age. She was backward at school and emotional. She had had no previous illness and she had been no trouble to bring up. The family history revealed nothing of note. The patient was the second child and the eldest had died of intussusception after a long history of digestive trouble.

The tonsils and adenoids were removed, but no alleviation was noticed in the enuresis and the patient drifted along for two years without any improvement, though every known avenue of cause was carefully explored by various investigators.

On November 10, 1922, when the child was eight and a half years of age, a complete psycho-neurological examination was made by a lay investigator, who knew nothing of the child's medical history. The technique of this examination is founded on the work of Professor Berry and Mr. S. D. Porteus and is the routine method of examination in use at the Anatomy School of the Melbourne University. The result of this investigation is shown on the accompanying table and its salient features require but little explanation. Without going into details it will be seen that the patient falls below the normal in every result, except the physical one.

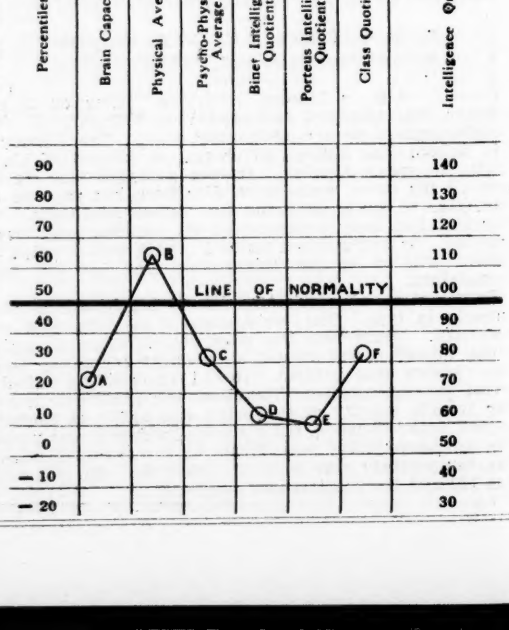
Comparing the results of this special examination with the results obtained from the history and general examination a most interesting parallelism is noticed:

Special Examination.	General Examination.
Physical average above normal	Good physical development No illness as a child Teething normal Walked well at eighteen months
Cubic capacity of brain below normal	Backward at school
Mental age: Three and a half to three and one-sixth years below normal	Talked late
Psycho-physical average below normal	"Regular cry baby" Lack of bladder control

No..... Name....A.B..... School.....

Date of Birth: June 21, 1914 Age: $8^{4}/_{12}$ years. Averages and Quotients. Date of Examination: November 10, 1922.

CUBIC CAPACITY BRAIN ..	1,172 c.cm.	26	(A)
Head Length..	166 mm.		
Head Breadth	142 mm.		
Head Height..	123 mm.		
PHYSICAL AVERAGE		64	(B)
Standing Stature..	1,258 mm.		
Sitting Stature	642 mm.		
Weight	28.25 kg.		
PSYCHO-PHYSICAL AVERAGE		30.6	(C)
Right Grip	12 kg.		
Left Grip	10 kg.		
Vital Capacity	600 c.cm.		
AVERAGE QUOTIENT			
Binet Age	$5^{4}/_{12}$ years	64	(D)
Porteus Age	5 years	60	(E)
Class Age	7 years	84	(F)



This case can be interpreted as follows:

A.B. is a child of good physical development, but of decidedly deficient mental calibre. This latter is almost certainly due to a lack of neurones, particularly in the supra-granular layer of the cerebral cortex, as shown by: (*i.*) Lack of educability. (*ii.*) Lack of control (*a*) of emotions, (*b*) of bladder.

A difficulty arises when an attempt is made to assign a cause to this lack of neuronic development. The mother was extremely worried and exhausted during her pregnancy owing to the illness and death of an elder child (*vide supra*) and this may be the *fons et origo* of the mischief. The action of deficient cerebral oxygenation, owing to nasal obstruction must be considered, but on account of the good physical development of the patient this would appear to be a subsidiary factor. Be the cause what it may, the fact remains the child is mentally deficient.

This case seems to me to illustrate well the use of a psycho-neurological examination. Had it been done when the tonsil operation failed to bring relief, much worry would have been saved to both physician and patient. It has enabled a reasoned prognosis to be given to the mother; it has established a definite basis for treatment and, most important of all, it has insured the training of the child along lines most likely to produce a social efficient. It has placed on a firm scientific basis what was before merely conjecture.

I do not suggest that every case of nocturnal enuresis without a readily discoverable cause is due to mental deficiency, but I do think this is one case where this condition obtains.

My thanks are due to Professor Berry, Mr. Upjohn and Miss Barling for valuable help and criticism in connexion with this case.

Reviews.

AN ENCYCLOPÆDIA OF MEDICINE.

THE editor, Dr. J. W. Ballantyne, has placed a foreword at the beginning of Volume VIII. of the "Encyclopædia Medica,"[1] explaining how the regularity of publication of the various preceding volumes was upset by the war and by further hindrances since. He announces that a more expeditious future is at hand and that he hopes to see the remaining four volumes appear at regular intervals of six months.

The volume now before us contains articles on a large number of important subjects. It can be said that it maintains the standard set in the preceding volumes. Amongst important subjects treated are a series of articles by various men on the larynx. These occupy eighty-seven pages. "Lichen" is illustrated with two excellent coloured plates. Another subject illustrated with a coloured plate is "Malingering," by Dr. T. D. Patmore. A series of articles on the subject of the liver, by various writers, occupies one hundred and forty-two pages; of these, Professor Noel Paton writes on the physiology, Sir Humphrey Davy Rolleston on diseases other than tropical and parasitic, Sir James Cantlie and Dr. Castellani write on the latter. We note that aspiration is still included as a "modern" method of treating hydatids of the liver. We think our authors are here very bad guides. The article on lunacy is by Sir John Macpherson, now Professor of Psychiatry at the University of Sydney. "Malaria" is very well written up. The article was originally by the late Dr. D. C. Rees and was revised for this edition by Dr. J. S. Fowler. Finally we have to commend the article on "Diseases of the Mammary Gland," by Sir Harold Stiles, as very clear and full of information, as we might have expected from its authorship.

[1] "Encyclopædia Medica," under the General Editorship of J. W. Ballantyne, M.D., C.M., F.R.C.P.E.; Second Edition; Volume VIII.: Labyrinth to Mammary Gland; 1922. Edinburgh and London: W. Green & Son, Limited; Sydney: Butterworth & Company (Australia), Limited; Royal 8vo., pp. x. + 704. Price: 20s. net.

Analytical Department.

NESTLÉ'S SWEETENED CONDENSED MILK.

NESTLÉ'S AND ANGLO-SWISS CONDENSED MILK COMPANY, LIMITED, have a factory at Dennington, Victoria, near Warrnambool, one hundred and seventy miles west of Melbourne, where sweetened condensed milk is prepared. No other product is handled at this factory. It is situated in the midst of a rich dairying district.

The Milk Supply.

The milk used in the manufacture is obtained from farms in the neighbourhood of the factory. The milk is collected and brought to the factory in the company's own motor waggons. Our inspector visited three farms to examine the conditions under which the milking is conducted. In two farms the milking was in progress at the time of the visit; in the third the milking had been completed and the farmer and his attendants were cleaning the milking shed and yard.

The company had drawn up regulations to be observed by the farmers supplying milk. These regulations are enforced by penalizing their infringement by rejecting the milk for periods varying with the gravity of the breach. Frequent visits are made by the inspectors employed at the factory to control the supply.

The farms are in good condition. The yards and milking sheds are provided with floors of impervious material, which are washed with water after the milking is completed. In front of each shed is a wind screen to limit the amount of dust blowing into the shed. The milk has to be cooled immediately after collection. There is a cooling apapratus in a small house closed off from the shed at each farm. These apparatus and houses were found to be in good, clean condition, as were all the utensils examined. There is a good water supply to the sheds and yards. In each there is a copper boiling pan for supplying hot water for the scouring of the utensils.

The cans used for the conveyance of the milk to the factory are supplied to the farmers at a nominal price by the company. They are free from holes and ledges and are provided with well-fitting lids. After each delivery the cans are cleaned at the factory and distributed to the farmers.

The Factory.

The factory at Dennington is a well-built, amply lighted building. All the floors are constructed of cement. They were found to be clean and in excellent condition. The water supply is obtained from a bore. The water is clear and free from sediment and odour.

The milk is unloaded at a raised platform made of cement. It is fitted with an apparatus for cleaning the cans. This consists of a trough with running water containing mechanical revolving brushes and a table over which the cans are inverted. The water is delivered in a strong jet and this is followed by a flow of steam.

Preparation of Sweetened Condensed Milk.

The milk is passed through a strainer and into a weighing machine. It is then passed, if necessary, through a cooler before it reaches the large vats. These vats are made of aluminium and are seamless. They are mounted on legs raised above the ground, so that the floor can be washed underneath them.

A sample of the mixed milk is then analysed for its fat content. When the result of this estimation has been ascertained, the milk is standardized to 3.5% fat by adding either cream or whey in measured amount. It is then ready for the process.

Some of the vats and the pipes carrying the milk were being cleaned at the time of the inspection. Our inspector was satisfied that this operation left nothing to be desired.

Condensation.

The standardized milk undergoes preliminary heating in a special apparatus; in this process it does not come into

contact with the steam. This process is practically pasteurization. Refined cane sugar is then added in proper quantity and after solution is attained, the hot milk is gradually sucked up into the vacuum pans, where the condensation takes place.

There are several preliminary heaters and vacuum pans in the factory. During the inspection some were in use and some were being cleaned after use. In the cleaning process the vacuum pans are first washed with water. A workman then enters the pan and scours it well with sea sand which has previously been sterilized. The pan is then washed with hot water and finally with a jet of steam. It is said that the cleaning of a vacuum pan occupies nearly three hours after each condensation. The empty pans were found in excellent condition and quite devoid of odour. The preliminary heaters are cleaned in a similar manner.

All the piping through which the milk passes, consists of lengths fitted together with screw joints. After use these joints are unscrewed, washed with water and scoured with sand, a long-handled brush like a gun-cleaner being employed. They are then rinsed with water and put into a long cylinder, which is closed and filled with steam under pressure. It is stated that they are again steamed immediately before use. Our inspector reports that every care is taken to keep all the apparatus and utensils used in the several operations as clean as possible. All the vessels inspected revealed evidence that these efforts are successful.

When the milk has reached the desired degree of concentration, the vacuum is broken by the admission of air through a filter of cotton-wool previously sterilized. In this way the introduction of dust is avoided. The milk is then drawn off into cylindrical cans and taken to the cooler.

The Cooling Process.

In the cooling process the cans are fitted on revolving platforms contained in a tank through which cold water flows. Fixed wooden paddles are lowered into each cylinder and the cylinders are made to revolve for the purpose of stirring the milk during the operation. The cans are open during this process, but the risk of contamination by dust and flies is minimized by the use of a large cotton sheet covering the whole apparatus. The manager stated to our inspector that these sheets are washed and sterilized after each use.

The wooden paddles are washed and sterilized and the cans, as has already been mentioned, are effectively cleaned. The water tanks are treated from time to time with lime and the room and drains are washed down every day. Both the cooling and cleaning operations were proceeding during the inspection.

When the milk is cooled, the cans are fitted with lids and removed to an upper story for filling into tins.

Canning.

The large cans containing the condensed milk are inverted over a funnel from which a pipe passes to the filling machine in the story below. The can is left to drain on the funnel; this serves to protect the preparation from dust and other gross contamination. The canning is carried out entirely by machinery; the tins are conveyed from one machine to another in a long chain. The filling machine automatically delivers the proper quantity of milk into each tin through a small hole in the lid. As the tins move along, small tin discs are slipped by hand over the holes; the tins are carried to another machine, where the discs are soldered, one operator soldering six at a time by pulling on a lever. In the next place the tins are brought to the labelling and wrapping machine and are finally packed in cases.

The tins are made in the factory in a series of machines connected with each other by rails. Rectangular sheets of tinplate are fed in at one end and pass automatically from one machine to another, until they arrive as completed cans at the testing machine. This machine rejects all tins that are not air-tight; the rest pass on to the filling apparatus.

No attempt is made to sterilize the tins, but the heat developed during the soldering process obviously destroys many of the bacteria on the tin-plate.

Control of the Material.

No trained analytical chemist is employed at Dennington. The chemical analyses carried out at the factory are simplified and can be carried out by girls or other employees. These analyses include the estimation of total solids, of fats, the determination of the specific gravity and of the acidity and the measurement of the sediment. Analyses of the finished product are made in the laboratory. A very rough bacteriological test is made by incubating a sample of milk from each farm. Some of the cultures are made with methylene blue. In this way the firm aims at a differentiation between souring organisms, gas-forming organisms and putrefactive bacteria. The last are recognized by smell. If the tests yield indications of the bad qualities, an inspection is made of the farm from which the sample came. At the time of the inspection the analyst and bacteriologist employed by the Nestlé's and Anglo-Swiss Condensed Milk Company, Limited, was visiting the factory at Dennington and was conducting bacteriological investigations involving the materials used, the contamination of the air in the several rooms and so forth.

The cane sugar used in the process is stored in a large, airy room with a cement floor; the bags are stacked at some height from the ground. The sugar appeared to be clean and of good quality.

Welfare of the Employees.

Between three hundred and four hundred persons are employed at the factory at Dennington. Two large, well-ventilated dining-rooms are provided, one for the male and the other for the female employees. There are also two large bath-rooms, fitted with wash basins, shower-baths and the like. There is, further, a laundry with steam and mechanical appliances, where overalls, towels and other personal objects may be washed.

Composition.

According to the information printed on the label of Nestlé's and Anglo-Swiss Condensed Milk Company's sweetened condensed milk, one volume of the contained product diluted with two volumes of water makes a fluid not below the composition of standard milk. Samples were analysed and the analyses yielded the following figures:

Constituents.	Condensed Milk.	Reconstructed Milk.
Total Solids	74.95%	28.8%
Fat..	9.03%	3.5%
Lactose..	14.50%	5.6%
Ash	1.77%	0.6%

These figures show that the milk, reconstructed according to directions, fulfils the requirements for a good milk. In addition, it contains approximately 15% of added cane sugar.

An examination of the number of bacteria present was made. For this purpose a measured quantity of the condensed milk was diluted with two volumes of sterilized water. This mixture was found to contain 2,800 micro-organisms per cubic centimetre, a number much below that in ordinary good cows' milk. It thus appears that the bacteria are largely destroyed in the manufacture.

Conclusion.

The sweetened condensed milk manufactured by the Nestlé's and Anglo-Swiss Condensed Milk Company, Limited, at their factory at Dennington is a clean, wholesome product, made under excellent conditions. It can be recommended for use whenever condensed milk is required as a substitute for fresh cows' milk.

The Medical Journal of Australia

SATURDAY, JANUARY 20, 1923.

A Retrospect.

Physiology.

DURING the past twelve months considerable progress has been made in physiological research in many directions. Some important work has been conducted in the Physiological Department of the University of Toronto on the specific functions of the cells of the islands of Langerhans of the pancreas. Banting and Best, working under Professor Macleod, established the fact that ligature of the pancreatic duct led to complete degeneration of the acinar cells without involving the islands. They prepared extracts of the degenerated organs and determined that these extracts were devoid of proteolytic enzyme-action. Further researches led to isolation of what is regarded by them to be the specific pancreatic hormone, at first from fœtal pancreas and later from the pancreas of adult animals after treatment with acid and alcohol. The insular cell extract, or "Insulin" as it is termed, has been applied to normal animals and to depancreatized dogs. In the former it leads to a lowering of the blood sugar content, followed by convulsive seizures and eventually coma. In the latter the extract appears to have the function of temporarily removing the hyperglycæmia and glycosuria.

Considerable insight has been obtained during recent years into the mechanism of muscular contraction. During he past twelve months this has been extended. Fletcher and Gowland Hopkins in 1913 discovered that there was a delayed heat production occurring after the muscle contraction was finished and held by them to be associated with the oxidative removal of lactic acid. Several workers, including A. V. Hill in England and Meyerhof in Germany, have confirmed and extended these observations. Meyerhof has demonstrated that in the initial stages of muscular contraction lactic acid is formed from glycogen with a hexose phosphate as a probable intermediary product and that during the recovery process, subsequent to the relaxation, three-quarters to four-fifths of the lactic acid is re-synthetized to glycogen and one-fifth to one-quarter burnt to carbon dioxide. A. V. Hill has shown that all the initial heat production is to be attributed to simple physico-chemical causes, namely, to the formation of lactic acid from glycogen and its neutralization chiefly by the buffered alkaline proteins of the muscle. The production of lactic acid leads to a rise in tension in the muscle and its neutralization to relaxation. These stages in the process can take place in the absence of oxygen. In the presence of oxygen they are followed by a restorative stage when about one and a half times as much heat is produced as in the initial stages. This heat production is associated with the oxidative removal of one lactic acid molecule in five or six and the resynthesis of the remainder to glycogen. The physical basis of the action of the lactic acid on muscle fibres is not yet clear.

Jacques Loeb has confirmed and extended his previous work on the physico-chemical properties of the proteins. In his book, "Proteins and the Theory of Colloidal Behaviour," he sets out very clearly his views. Loeb's theory is based on the conception that the proteins are amphoteric electrolytes reacting with acids and bases to form ionizable salts and on the Donnan theory of membrane equilibrium. Although Loeb's views must have a profound influence on the development of physiology in the near future, they are as yet too new for their physiological applications to have been investigated to any extent. Robert Loeb, D. A. Atchley and W. W. Palmer have studied blood serum and œdema fluid from the same individual and have found that œdema fluid contains more chlorine and potassium than the blood serum, while sodium carbonate, calcium, urea, glucose and non-protein nitrogen exist in approximately the same concentration in both. These variations seem to be related to the different concentrations of proteins in the two solutions and the authors consider that the relationship between blood serum and œdema fluid results from a simple membrane equilibrium. P. A. Levene suggests that the Donnan membrane equilibrium may play an important if not

the exclusive part in bringing about a difference in the ionic concentration within and without the phosphatide phase in living matter. When consideration is given to the abundance of phosphatides, such as lecithin, in the outermost parts of cell protoplasm, the importance of this conception is manifest. Warburg has demonstrated the importance of the theory of membrane equilibrium to explain the carriage of carbon dioxide in the blood.

A great deal of interesting work has been done on the secretion of urine by the kidneys, but the results obtained by different observers are difficult to correlate. E. B. Mayrs has shown that sulphate, phosphate and creatinine have almost the same concentration ratios, *id est*, the ratio of the amount in the urine to the amount in the plasma and considers this an indication of their concentration by absorption of water by the tubules. Urea is absorbed in considerable amounts and is possibly of some use to the organism. The fluid cannot be constant as Cushny postulates. G. A. Clark states that in the frog the glomerular membrane is completely permeable to glucose, but the epithelium of the renal tubule has the power, in the absence of calcium, of absorbing glucose from the glomerular filtrate up to a normal threshold value. This absorption is possible until the capillaries surrounding tubules contain glucose at a concentration nine or ten times that normally present in the blood. The experiments of J. G. Priestley on diuresis following water drinking suggest that the excretion of water is largely but not entirely independent of the excretion of chlorides. J. M. O'Connor and E. J. Conway have investigated the place of excretion of uric acid and iodides and their experiments seem to indicate that iodides are excreted into the glomerulus and the uric acid into the second convoluted tubule. H. W. Davies, J. B. S. Haldane and G. L. Peskett have shown that there is a limiting concentration for chlorides and bicarbonates in urine. When strong solutions of chlorides and bicarbonates are taken, both appear in the urine in large amounts, neither reaching its maximum concentration, but the sum of the two reaches a value which, expressed in normality, is equal to the maximum of either. If bicarbonate be given without chloride, the latter may almost disappear from the urine.

Biological Chemistry.

As in late years, the study of the processes of nutrition still claims the attention of the majority of research chemists interested in biological problems. The growth of children has been followed with watchful scrutiny by American physiologists. There seems to be general agreement that a lower weight than the average and diminished height for the age are mainly due to unsuitable feeding. The child may eat enough food judged by weight of proteins, carbo-hydrates and fats and by number of calories ingested; but the proteins may be unsuitable, the fats not stored, unless a proper balance is made, and growth retarded from a lack of vitamins. Many instances have been noted in which children, less than the average height, have made progress as a result of adding milk during school hours to the home diet. Some physicians have advocated giving not less than one litre daily of milk to each child of ten years of age. Sherman and Hawley have brought forward evidence suggesting that at least a litre of milk is needed by children thirteen years of age to supply the amount of calcium stored in the growing bones. They measured the rate of storing calcium on different diets by children varying in age from three to thirteen years. They found that more calcium was stored within the body when milk formed a proportion of the diet and the amount of calcium retained increased until a litre of milk was given daily. A further increase in the amount of milk in the diet did not augment the quantity of calcium stored by the child. Stress is laid by some investigators on the advantages of giving raw milk, though some state that pasteurized milk is as valuable as fresh milk provided vitamin B is given in sufficient amount daily, as lemon or orange juice.

E. V. McCollum and his co-workers have investigated the problems of experimental rickets. They attribute it to lack of a fourth vitamin usually associated with fat-soluble vitamin A. This vitamin promotes the deposition of lime in bones in animals and children taking rations containing a low concentration of calcium. Cocoanut oil contains a considerable amount of the anti-rhachitic vitamin; but it does not prevent the onset of xerophthalmia, nor does it cure this condition. Generally animal fats and fish oils contain both fat-soluble A and the

anti-rhachitic vitamin, while vegetable oils are deficient in both these substances.

Hess and Unger have continued their studies of the mode of action of vitamins. They found that the onset of scurvy in guinea-pigs, fed on the usual diet giving rise to scurvy in three weeks, could be entirely prevented by placing the guinea-pigs in direct sunlight for half an hour at least during each day. There has been a considerable amount of controversy on this matter. Some observers claim to have confirmed the results. Further experimental work is needed to clear up the points at issue.

The wide-spread habit of taking sour milk in large quantities has led to the observation that the urine becomes much more acid after the administration of lactic acid either alone or as sour milk. This fact is of clinical significance, since it has not been found easy to increase the acidity of the urine by administering drugs. The use of sour milk has been found more effective than the exhibition of acid phosphates or of benzoates. The hydrogen-ion concentration can be raised to $P_h = 5.7$ by the daily use of a litre of milk soured by "Russian culture" or some other microbe.

It has long been known that glucose plays a part in the β-oxidation of fatty acids. Shaffer and Underhill have independently reached the conclusion that oxybutyric acid, diacetic acid and acetone do not accumulate in the body, provided one molecule of glucose is available for each molecule of β-oxybutyric acid formed in the oxidation of the fatty acids. It has been found easy to abolish the presence of acetone in the urine of diabetic patients, provided the diet is so adjusted that it contains carbo-hydrate or carbo-hydrate derived from protein in proper relation to the amount of fat.

The extensive studies of L. J. Henderson, Parsons, Van Slyke, A. V. Hill and many others have greatly increased the clarity of the conceptions of the interactions of oxygen, carbon dioxide, hæmoglobin, chlorides and other constituents of the blood on which the respiratory functions of the blood depend. The substances concerned in the reactions, the nature of the reactions, together with a knowledge of the conditions under which these latter occur, have been ascertained. So successful has been this research that Henderson has solved the mathematical problem of expressing in a practical manner the many relationships that are involved. It is to be hoped that the knowledge of these reactions will soon be correlated with measurements made in persons suffering from pathological conditions affecting the respiratory functions. Cyanosis is a not uncommon condition. Little is known of the causation of this condition beyond that it is not usually due to lack of oxygen. Apart from the cyanosis due to suffocation, drowning and so forth, in which lack of oxygen and reduction of hæmoglobin occasions the coloration, cyanosis is frequently observed along with an adequate amount of oxygen in the blood.

Pathology.

The science of pathology continues to cover a field of ever-increasing dimensions. The ramifications of bacteriology and immunology, added to those of morbid anatomy, are extending further each year. There has been much done during the past year to encourage the pathological investigator. The phenomenon described by d'Herelle is of more than academic interest in the problems of immunity. D'Herelle found that if an emulsion of the fæces of a person convalescing from dysentery was filtered through a close porcelain filter and the filtrate added to the turbid suspension of dysentery bacilli, the suspension became clear and the bacilli were killed. This process could be repeated innumerable times with the same filtrate. D'Herelle held that the stools of the patients contained a filter-passing organism endowed with the power of destroying dysentery bacilli. Others held that the destruction of the bacilli was due to the action of a special ferment acting in conjunction with an autolytic ferment derived from the bacilli. Many observers, including Prausnitz, opposed this view. D'Herelle's experiment has been amply confirmed and though the presence of a filter-passing virus is commonly regarded as being the explanation of the phenomenon, this has not been proven.

Fibriger, of Copenhagen, has conducted some important experiments with the production of cancer in rats by infections with spiroptera. During the war, Japanese workers produced malignant tumours in rabbits by the long-continued application of coal tar. More recently Murray found that, using whole

tar, alcoholic extract and ether extract of tar, more tumours were obtained with the extracts. Last year Leitch reported for the first time the results he had obtained when endeavouring to establish on a broader basis the causal connexion of certain irritants with cancer. Much and apparently interminable controversy had raged between those who regarded specific substances implicated in certain industries as the predispoing cause to malignant disease and those who maintained that such irritants were the proximate cause of the condition. Leitch maintained that the results of his experiments lent considerable support to the theory of the irritant being the prime cause of tumour production. For many months he applied various distillation products of shale oil to the skin of large numbers of animals. In mice after a period of four months there occurred wart formation which was generally multiple and these warts slowly gave place to true infiltrating epitheliomata. In another series of experiments Leitch and his colleague Kennaway found that by painting mice with a solution of arsenic one hundred times weaker than Fowler's solution they produced in addition to papillomata rapidly growing epitheliomata with metastases in the lungs.

Contributions to the pathology of mammary carcinoma have recently been made by Cheatle and Handley. The dismissal by the latter of the blood route of invasion, especially in connexion with metastatic tumours in situations such as the *dura mater*, should be accepted with reserve. In regard to his statement that carcinoma of the mamma always precedes Paget's disease of the nipple, it is interesting to note that St. J. W. Dansey has recently produced evidence which shows that Paget's disease can arise as a primary epithelioma and that carcinoma may appear as a secondary condition. The pathogenesis of renal tumours has been studied along histological lines by E. H. Derrick. He regards the so-called hypernephroma as arising from renal parenchyma and not from adrenal rests as Grawitz believed and he suggests that the term hypernephroma should be altogether abandoned.

The work of Neufeld and Handel, of the investigators at the Rockefeller Institute and of Lister in South Africa in connexion with the differentiation of types of pneumococci has been continued by Eastwood and Griffiths. They determined the incidence of types of pneumococci isolated from pneumonia in London and held that there were three distinct types and many atypical strains which could be grouped as twelve varieties of Group IV.. W. J. Penfold investigated the action of pneumococci on aromatic amino-bodies. He found that all pneumococci and probably all streptococci acted on certain aromatic amines producing pigment and held that these pigments were probably due to the oxidation of the amino-bodies by the peroxide produced by these organisms. S. W. Patterson investigated the influence of pneumococcal serum in the treatment of pneumonia and found that the results were sufficiently striking to warrant a wider use of serum.

Much work has been done with complement fixation tests. It has been abundantly shown that a failure to obtain a reaction to the Wassermann test is of doubtful value as an indication of cure. Shearman is amongst those who have shown that the ice-box method is a more reliable and sensitive method of performing the test. N. H. Fairley has made a careful study of the complement fixation test for hydatid disease. He found that clear, uncontaminated hydatid fluid containing scolices from the cysts of sheep was the most reliable antigen. Fairley obtained a reaction in 84% of patients with hydatid cysts. In eight patients with non-hydatid helminthic diseases no reaction was obtained. A. L. Punch and A. H. Grosse have continued their investigations of the complement fixation test in tuberculosis. They hold that a positive reaction may be obtained before tubercle bacilli can be demonstrated in the sputum. On the other hand, Rouslacroix, using Besredka's antigen, obtained a positive reaction in six patients who were recovering from *encephalitis lethargica*. Armand-Delille, Hillemand and Lestocquay obtained a high percentage of positive results, but they also obtained positive results in many patients suffering from non-tuberculous conditions. They regard the test as unreliable from a diagnostic point of view. A. S. Walker has investigated the complement fixation test in gonorrhœa and regards it as of considerable value both as a diagnostic agent and as a reliable link in the evidence of cure.

Van den Bergh in 1921 showed that the diazo

reaction of Ehrlich gave its characteristic bluish-violet colour with bilirubin. He applied this to the blood and described two reactions, the direct and indirect. The former he described as being obtained in patients suffering from obstructive and the latter in patients suffering from non-obstructive or hæmatogenous types of jaundice. M. Cowen and S. W. Patterson have made an investigation into the value of this test and consider it as likely to be of considerable diagnostic use.

In 1905 Hektoen published experiments to show that measles could be transmitted to monkeys by injecting them with the blood of patients suffering from that disease. Duval and D'Aunoy have succeeded in transmitting measles to guinea-pigs in the same manner. It should be mentioned that Sellards and Wentworth were unable to confirm Hektoen's findings.

The work of Patterson and Williams and of Dew and Fairley on the presence of dysentery bacilli in the stools of adults and children suffering from colitis has been continued by E. Marjory Little and Marjorie Ross. They have found dysentery bacilli of both the Flexner-Y type and of the Shiga type in the stools of children suffering from entero-colitic disturbances.

Therapeutics.

No conspicuous discovery has been made in the realm of therapeutics during the last twelve months. The period has been one of elaboration and testing rather than of discovery. The clinician is sometimes apt to forget that the main work in therapeutics is carried out in the laboratory. He is too prone to regard drugs from the empirical standpoint and to ignore the tried and proved pharmacological action.

This year has seen the testing of quinidine as a therapeutic agent. Although Wencklebach in 1914 endeavoured to cope with auricular fibrillation by the use of quinine, it was Frew who carried out systematic investigations on the action of cinchona and its alkaloids. He found that of the four known alkaloids quinidine was the best depressant and the least toxic. He also warned clinicians of the dangers attaching to its use, for he had found that it gave rise to paralysis involving the respiratory centre. Frew's work has been confirmed and extended by many physicians. Among the more noteworthy in this regard is M. D. Silberberg. He has shown that the clinical value of the drug is undoubted and that its action is threefold. It lengthens the refractory phase, slows conduction in the auricle and has a direct action on the junctional tissues. At the same time he has admitted that its use is accompanied by possibilities of undesirable action. Much attention has been paid to digitalis. Its routine use in pneumonia has been the subject of discussion. W. J. Stone investigated this aspect of the subject, particularly in regard to intensive therapy by large doses. He, like all workers on this subject, lays stress on the necessity for the standardization of preparations used, particularly in regard to the interpretation of results. The most noteworthy contribution to the literature on digitalis is the monograph by G. Canby Robinson which appeared in the first number of *Medicine*. It may be regarded as a reliable exposition of knowledge on the subject from the American standpoint.

Some interesting investigations have been carried out in connexion with saline purgatives. Underhill and Errico have shown that they produce a concentration of the blood. Their action is due to osmosis and the drawing of water from the blood into the lumen of the bowel. Macht and Finesilver have drawn attention to the effect of saline purgatives on the absorption of other drugs. Absorption is delayed in the presence of saline purgatives. Barach, Mason and Jones have investigated the intravenous administration of hypertonic salt solution to patients with cerebral tumour. They found that there was a resulting increase in blood plasma volume and symptomatic improvement in all the patients. "Luminal" or phenyl-ethyl-barbituric acid has been brought from temporary obscurity. This drug is a substitution product of "Veronal," in which one ethyl group is replaced by a phenyl group. W. Johnston has advocated its use in *petit mal*, either alone or in combination with bromides. Magnesium sulphate lavage of the duodenum continues to engage attention. Though many have investigated the subject, nothing has been added to the original work of Meltzer and Lyon, who demonstrated that this procedure causes evacuation of the gall bladder and may relieve jaundice.

Abstracts from Current Medical Literature.

GYNÆCOLOGY AND OBSTETRICS.

The Cæsarean Cicatrix.

THOMAS O. GAMBLE (*Johns Hopkins Hospital Bulletin*, March, 1922) has made a clinical and anatomical study of fifty-one instances of repeated Cæsarean section, with especial reference to the healing of the cicatrix and the occurrence of rupture through it. There were sixty-three pregnancies in the series, occurring in fifty-one women who had previously been subjected to Cæsarean section. The pregnancies were terminated as follows: A second or third Cæsarean section was done in forty-five instances; vaginal delivery occurred in seventeen instances; rupture of the old Cæsarean scar occurred in one patient. The author concludes that the weak Cæsarean scar may be due to a single factor or a combination of factors, the most important of which is infection. An afrebrile puerperium does not give an absolute assurance of perfect wound healing. The perfection of technique in suturing the uterine incision will undoubtedly lessen the incidence of weak scars. Chromacized catgut has, in the author's hands, proved to be a satisfactory suture material. The uterine wound should not be closed, if possible, until firm contraction of the musculature has occurred. As a rule, fœtal elements do not invade the uterine scar. Adhesions following Cæsarean section are common. They are not necessarily the result of co-existing infection and may give rise to serious complications at subsequent operations. The dictum "once a Cæsarean, always a Cæsarean," cannot be accepted without considerable reservation. A patient who has once been subjected to a Cæsarean section, should enter hospital several weeks prior to the expected date of confinement, so that she may have the benefit of immediate operation should rupture occur.

Operative Treatment in Pelvic Tuberculosis.

REUBEN PETERSON (*The American Journal of Obstetrics and Gynecology*, September, 1922) has reviewed one hundred cases of women with pelvic tuberculosis. The patients were not selected, but included all those in whom tuberculosis was found to be present and who were submitted to operation in the clinics at the Michigan Medical School from 1901 to the present time. In view of the fact that pelvic tuberculosis is usually a secondary infection, he concludes that it is of the first importance to find and estimate the extent of the primary focus before deciding for or against operation for the pelvic lesion. Operation should be postponed or avoided altogether when the pulmonary tuberculous lesion is extensive, for such procedures may augment the pulmonary lesions. In the series of patients reviewed over 50% of those who died, had demonstrable pulmonary tuberculous lesions. The end results of operative treatment of pelvic tuberculosis are on the whole favourable and about 75% of the patients should be alive and in good health after a considerable period of years. Whenever the condition of the patient warrants, radical removal of the pelvic organs is indicated, since more than one portion of the genital tract is usually involved in the tuberculous process and because the best end results follow such radical removal. Unless too extensive, tuberculosis of the peritoneum will be cured if the other pelvic tuberculous lesions be removed.

Pelvic Hæmatocele.

J. WESLEY BOVÉE (*The American Journal of Obstetrics and Gynecology*, June, 1922) discusses the pathology, clinical manifestation, prognosis and treatment of pelvic hæmatocele from causes other than ectopic pregnancy. In 1889 Formad declared that all hæmatoceles of the tubes should be classed as ectopic pregnancies. The author quotes a large number of competent observers to prove that this dictum is quite erroneous. It has been shown that in some women menstruation occurs from the mucous membrane of the Fallopian tube, as well as that of the uterine body. Bovée gives details of the operative finding in a girl, aged twenty-two years, who had a hæmato-salpinx with hæmatocele as a result of a congenital misplacement complicating an influenzal infection. The patient was not pregnant. The causes of pelvic hæmatocele are divided into menstrual and non-menstrual. The menstrual cause is defined as excessive congestion. The causes unconnected with menstruation include active hyperæmia of infective origin, passive hyperæmia, thrombosis, prolapse, varicosities, torsions and adhesions and, lastly, new growths. Among the remote or general causes he instances acute or chronic poisoning, diseases affecting the circulation, general infections, hæmophilia, burns and ulcers and blood diseases. The diagnosis is often very difficult and is rarely made prior to operation. The symptoms vary with the amount of blood poured out into the pelvic cavity. Sudden, localized pain, collapse and metrostasis are usually the initial symptoms. The attack is frequently determined by some physical exertion. Menstruation is usually present, although it has been pointed out that when the blood is derived from the *corpus luteum*, the menstruation has ceased some days previously. The bleeding may be extremely profuse and lead to a fatal issue within a short time. The author points out that the rupture of an ectopic gestation may simulate very closely the hæmorrhage under discussion. In the majority of instances recovery from pelvic hæmatocele occurs, even if untreated. He lays considerable stress on the necessity of differentiating between the two conditions, which can be effected only by microscopical examination. If the loss is small, rest in bed, with or without morphine, and local measures will usually be sufficient. When the patient's condition is serious operative treatment is necessary. The question of transfusion has to be considered.

Pregnancy and Heart Disease.

W. W. HERRICK (*The American Journal of Obstetrics and Gynecology*, July, 1922) has investigated forty instances of heart disease in pregnant women from a medical point of view. The author concludes that an ante-natal clinic is essential in detecting the early evidence of decompensation. All patients showing signs of decompensation at any stage of pregnancy should be admitted to hospital and given medical treatment, no matter what the stage of pregnancy. Induction of labour should never be attempted until thorough trial has been made of medical measures. The response to treatment of the average patient with chronic valvular disease of the heart is satisfactory. The same principles govern the treatment of pregnant patients as govern the treatment of patients whose cardiac conditions are uncomplicated by that condition. The termination of pregnancy in the presence of chronic valvular disease of the heart is not a matter about which hard and fast rules can be laid down. In general, if decompensation occurs early in pregnancy, or if it does not respond to medical treatment, if it has occurred and has been severe, despite proper care in previous pregnancies, and if the signs and symptoms indicate serious lesions, termination is usually wise. The method by which pregnancy should be terminated, should be one giving a short and easy second stage.

Sterility in Women.

R. S. CRON (*The Journal of the American Medical Association*, August 26, 1922) has summarized recent work on sterility in the direction of inflating the Fallopian tubes to determine their patency. He states that transuterine and trans-abdominal carbon dioxide gas inflation for diagnostic purposes can be used with safety. Transuterine inflation will reveal the patency or non-patency of the Fallopian tubes. The true condition of the lumina of the tubes cannot be diagnosed by bimanual examination. Manometer readings of more than one hundred and fifty millimetres of mercury during trans-uterine inflations usually signify obstruction to the inflow of gas through the tubes, most commonly due to a salpingitis. This interpretation should be accepted if the gas enters only after repeated attempts. More than 50% of sterile patients tested in this way had occluded tubes. Stereoscopic X-ray examination of the pelvic organs is more accurate than bimanual examination. Especially is this true of those patients in whom palpation is unsatisfactory. Uterine tubes with constricted or obstructed lumina at either the proximal or the distal end may be dilated sufficiently by the gas to permit the passage of an ovum.

NEUROLOGY.

On the Production of Neuro-Muscular Patterns.

WALTER M. KRAUS AND ABRAHAM M. RABINER (*Journal of Neurology and Psychopathology*, November, 1922) write that abnormal movements and positions are customarily described as such without naming, in addition, the muscles which produce them. There the matter is allowed to rest—"the arm and hand are flexed," "the arms are adducted, the elbows extended, the wrist and fingers flexed." The anatomical relations of the muscles and nerves causing such groups of movements have never been seriously considered in clinical neurology. Therein lies an error of commission. The authors show that there is a well-defined grouping of nerves and muscles under integrating control of the spinal cord, arranged in ventral and dorsal groups, as described in Quain or Cunningham's text-books of anatomy. It is on the basis of this grouping that formulæ expressing disease in certain parts of the central nervous system of man must be built. For example, the formula for the flexion reflex in both arm and leg is *D V D* and is opposite to that of the antigravity posture of decerebration, which is *V D V*. The integrations of the spinal cord have clearly defined patterns. By virtue of their activity certain muscles always act together and in the same general way. Their activity may be recognized by inspection and palpation and by changes in position. The activating forces of these patterns are two—one kinetic, the other static. The latter is spoken of as tone. With a clearly-defined notion of this and the other simpler spinal integrations, the study of supra-spinal integrations of movement and posture and their significance becomes possible.

Cerebellar Atrophy.

PIERRE MARIE, CH. FOIX AND TH. ALAJOUANINE (*Revue Neurologique*, August, 1922), under the name "*L'Atrophie Cérébelleuse Tardize à Predominance Corticale*" describe a new form of cerebellar affection. They consider that it has a definite clinical and anatomical individuality. It is characterized anatomically by atrophy, visible to the naked eye, of an extensive part of the anterior superior surface of the cerebellum. Histologically, cortical degeneration consisting of disappearance of Purkinje cells and their processes and rarefaction of other elements is shown. There is no accompanying inflammatory change. The white substance, the dentate nuclei and the cerebellar peduncles are spared, but the olives in part are degenerated. Clinically, the signs are slow in onset and gradually progressive. The dominance of equilibratory disorder, particularly a cerebellar gait, is typical. The lower extremities are affected much more than the upper. Other cerebellar features are less obvious. The pathogeny of the condition remains obscure. It is to be grouped with the acquired cerebellar atrophies. In a general way it comes into line with the conceptions of Edinger concerning the palæo- and neo-cerebellum and those of Ramsay Hunt, André-Thomas and Rothmann concerning the functions of the *vermis*. It gives rise to the supposition that the *vermis* stands for postural, static and automatic movements, while the lateral lobes subserve voluntary movements. In this manner the dominance of lower limb affection, would be explained in the condition described by the authors.

Function of the Cerebellum.

SVEN INGAR (*Folio Neuro-biologica*, 1921, Volume XI., No. 2) thinks the cerebellum serves the unconscious sense of "mass." It operates reflexly to overcome the gravity and inertia of the masses of the body and preserve the equilibrium of the various mechanical systems. It may be noted that even plants have a special sense organ for the perception of gravity. The unity of function of the cerebellum explains why its cortex, unlike that of the cerebrum, does not harbour different histological areas. Afferent stimuli received by all parts of the cerebellar cortex are always of essentially the same kind, as are also the efferent innervations projected to the various regions of the body, whether to the locomotor muscles or to the speech apparatus. But, while no areas of different structure are distinguishable, there is, nevertheless, a precise localization, not according to the segments of the body, but according to the synergies of the muscles necessary for equilibration, *id est*, according to the directions of falling and of motion of the body. It need no longer excite wonder that the frog and crocodile have Purkinje cells as delicately elaborated as those of man. All living creatures obey the laws of matter and the same force holds them to the earth.

Amnesia (Korsakoff) in Multiple Neuritis of Pregnancy.

FRANK A. ELY (*Journal of Nervous and Mental Diseases*, August, 1922), writing on the question of amnesia associated with multiple neuritis of pregnancy, first refers to the gross loss of memory and mental confusion which have long been recognized as accompanying alcoholic neuritis and designated Korsakoff's psychosis. He also points out that memory defects have been associated with poisoning by carbon monoxide. Next he reports four instances of multiple neuritis arising during gestation or in the puerperium without dependable evidence of underlying infection. In each of these patients there was a mild psychosis of the Korsakoff type, in each also, there had been *hyperemesis gravidarum*. In this connexion it is mentioned that amnesia was recognized as a common accompaniment of the multiple neuritis following *hyperemesis gravidarum* long before Korsakoff's name was affixed to the alcoholic syndrome and it is suggested that in such cases, therapeutic abortion, the best remedial measure, is perhaps too long deferred.

The Treatment of Epilepsy with "Luminal."

LOUIS WENDER AND D. G. SAMPSON (*New York Medical Journal*, September, 1922), as the result of observations at Corozal Hospital, conclude that "Luminal," as a palliative drug, is far superior to bromides in the control of epileptic seizures. In doses of 0.09 gramme (one and a half grains) daily the drug may be safely given over long periods. One of the most remarkable effects is the change it produces in the mental attitude of the patient. The dull, surly, irritable epileptic becomes more cheerful and cooperative. The writers observed no ill-effects and nothing that would lead them to believe it was a habit-forming drug. There were no skin eruptions and no digestive or circulatory disturbances. The exhibition of the drug, however, was not entirely devoid of unpleasant results. Its power to inhibit convulsive seizures was not permanent. In most of the patients, when it was discontinued, the convulsions returned with greater frequency and severity. The use of "Luminal" must not be discontinued abruptly, because a *status epilepticus* may ensue. One female, who was having an average of ten convulsions a month while receiving "Luminal," had three hundred and four seizures during the first six days following the abrupt discontinuation of the drug. Toxic symptoms resembling those caused by "Veronal" poisoning, have been reported by others who have given "Luminal" in large doses for hypnotic purposes.

Thomsen's Disease.

JOSHUA ROSETT, of Columbia University (*Brain*, June, 1922) has studied eight cases of Thomsen's disease occurring in a family exhibiting remarkable features of inheritance in three generations. The affected individuals were a grandmother, three of her children and five grandchildren. The value of a Mendelian study is emphasized. The author states that five out of the eight instances reported would have escaped recognition but for the possibility of grouping the family into distinguishable physical types. Thus, one only of these patients came forward with the complaint of myotonia, but the suspicion attaching to certain physical likenesses led to an investigation, with the result that every one proved to be myotonic. The particular character which offered a ready linkage to the character of myotonia, was that of a large musculature. Large musculature, therefore, is a favourable receptor for the hereditary factor of myotonia, by which term is understood a failure of the contracted muscles to relax with a sufficient degree of dispatch. Attention is also drawn to the frequent association between myotonia and myatrophy and to a peculiar psychological concomitant of Thomsen's disease, *viz.*, the fear of ridicule. Thomsen himself wrote: "As soon as the feeling arrives that those about will discern and observe the disability, the symptoms become aggravated in the highest degree."

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, 30-34, Elizabeth Street, Sydney, on November 24, 1922, DR. T. W. LIPSCOMB, the President, in the chair.

The Neuroses.

DR. M. C. LIDWILL read a paper entitled "Some Notes on the Diagnosis and Treatment of the Neuroses" (see page 57).

PROFESSOR SIR JOHN MACPHERSON complimented Dr. Lidwill on his paper, which he characterized as very artistic, very instructive and very interesting. Dr. Lidwill had dealt with questions concerning which there was much difference of opinion. He, the speaker, was prepared to endorse the differential diagnosis of neurasthenia and hysteria, as explained by Dr. Lidwill in the abstract. In practice, however, it was not as easy as it looked on paper. He thought that at the present time the whole subject of the classification of the psycho-neuroses was in a state of chaos. This was largely the result of the teaching of the Freudian school, which had introduced an unnecessarily elaborate classification, entirely devoid of a logical basis, thereby making the darkness more obscure. It would seem, according to them, that the neuroses were chiefly physical, involving questions of the present, while the psycho-neuroses were chiefly mental, involving questions of the past. But the basis of both was undoubtedly mental.

Professor Sir John Macpherson regarded the definition of hysteria given by Janet as the best yet produced. Hysteria was a form of mental depression characterized by a limitation of the field of personal environment and by dissociation of the systems of sensation, ideas and functions that constituted the personality. This definition was excellent as far as it went. Binswanger, Babinski and Head had also contributed to the understanding of these conditions. Binswanger had taught that hysteria was not necessarily caused by mental processes. He had set up the theory of cerebral dissociation and had postulated a functional disturbance which passed from the cortical to the spinal and other regions, throwing these structures out of action. He therefore had claimed that hysteria did not necessarily depend on a psychical change. Babinski had sought to reduce the group of the hysterias to a very small one. In the first place there was the condition in which the symptoms were produced by over-suggestion and could be removed by suggestion. In the second place, he recognized a group of affections which were habitually and erroneously diagnosed as hysteria. In the third place there was a group of affections whose most striking characteristic was the power to imitate the symptoms of other diseases. Henry Head had pointed out that every physical disease had its mental correlate or counterpart. Nervous stimuli passed from an affected visceral organ through the sympathetic fibres to the central nervous system and pains reflected in this manner from a particular site had a powerful effect in producing mental and physical symptoms of the type found in hysteria. Pains of visceral origin led to delusions, hallucinations, fits of crying, fits of temper and suspicion. It was significant that these symptoms were removable by suggestion, in the same way as other hysterial symptoms. Sir John related the history of a man who had consulted two London specialists and each of them had diagnosed pulmonary tuberculosis. He had been sent to the Isle of Wight and had been placed under the care of a Scotch practitioner, who had said to the patient: "You haven't got phthisis; you have never had phthisis." The patient had immediately got quite well. Eighteen months later this patient had developed Graves's disease. After a time he had recovered from this complaint, but later he had developed a paresis of his lower limbs. A psycho-analyst in Harley Street had endeavoured to unearth an early sexual complex. This patient had undoubtedly been hysterical, but Sir John Macpherson held the opinion that he had had pulmonary tuberculosis and that this had been the origin of his hysteria.

Turning his attention to the question of treatment, Sir John Macpherson agreed that the means employed were extremely various. At times the patient recovered without any treatment. Others got better under compulsory treatment, under hypnosis, under psycho-analysis. Others, again, did not recover, no matter what treatment was applied. Janet had stated that it was often futile to hypnotize an hysterical patient in order to relieve a particular symptom, for the result was often merely a change from one symptom to another. It was possible to hypnotize a patient and thus to remove the amnesia which was concealing the complexes that caused the symptoms. Janet had recently reviewed the condition of two hundred patients treated for hysteria and had found that the great majority had not relapsed when the symptoms had been thoroughly removed. It would seem that relapse occurred when the treatment had not been carried far enough. This method appeared to the speaker merely as another method of effecting the results claimed for psycho-analysis.

PROFESSOR A. E. MILLS expressed great pleasure in having listened to Dr. Lidwill's able paper and to Sir John Macpherson's admirable dissertation. It was particularly refreshing to hear Sir John admit that he did not know and no one else knew what was the real nature of hysteria and neurasthenia. Many theories had been advanced to explain these conditions. All the hypotheses, however, had failed to convey a clear conception of hysteria to his mind. In practice they had arrived at the diagnosis of hysteria by excluding organic disease. Professor Mills referred to a patient who had been suffering from a condition diagnosed as angina with an extreme degree of arterio-sclerosis. The patient had been seized with pain while running for a train. He had been carried home and put to bed and had been treated with sedatives. The pain complained of had been situated on the outer side and had corresponded to the sixth and seventh thoracic segments. Since the heart as a viscus was in relation to the four upper thoracic segments, it was obvious that the pain complained of could not have been *angina pectoris*. The patient had recovered under appropriate treatment. Another patient had been in bed for six weeks on account of an alleged angina with arterio-sclerosis. This patient was an important person in the household. The practitioner who had been treating her, was convinced of the correctness of his diagnosis. Professor Mills had based his conviction that the condition was not angina on the distribution of the pain. The symptoms had disappeared under treatment. In every case it was necessary to resort to the old plan of careful and thorough examination. He had been a little disappointed that Dr. Lidwill had not emphasized this point more strongly. Before closing his remarks, Professor Mills dealt briefly with the ill-defined border-line between hysteria and insanity. Sir John Macpherson had referred to the occurrence of delusions and hallucinations in hysterical conditions. In these cases it was only possible to arrive at the correct diagnosis by a process of exclusion.

DR. RALPH NOBLE said that it was encouraging to find that these subjects were being carefully considered. It was puzzling that under certain conditions hysterical anæsthesia persisted after organic disease had been excluded. Rivers had found that every person suffering from hysteria had an unconscious motive which found expression in a defensive mechanism. In the presence of extensive anæsthesia or paralysis the loss of sensation or of movement would appear to be the result of the patient's idea of protection. Dr. Noble thought that it was a disadvantage that treatment was known by so many names. There were, in fact, only two or three forms, namely, suggestion, persuasion, analysis and re-education. Suggestion was used more than any other form of treatment. Much physical treatment, such as the application of electricity, acted to a large extent as suggestion. Persuasion or logical argument attempted to give the patient a new point of view from which to reason. Analysis appeared to him to be of extreme value, because it aimed at ascertaining the unconscious motive of the conditon. He did not necessarily mean Freudian "psycho-analysis." Analysis was particularly useful when pure suggestion had failed. Hypnosis was of value in the revival of amnesia and as an artificial means of using suggestion, because the patient was more suggestible when in the condition of hysteria. It was rarely of value as a means of inducing permanent cure. He had seen in London a patient who had been hypnotized every week for several years. No doubt this treatment was the best that could have been done for the patient,

but it had not produced much good. Re-education was essential after any other form of treatment had been applied.

DR. HARVEY SUTTON, O.B.E., pointed out that the theories as to conflict did not adequately consider the character of the individual and the remarkable sex incidence. Women teachers tended to present as their most serious causes of sick leave of a month or more an often progressive series of disabilities—anæmia, neurasthenia, hysteria, even going on to melancholia and depressive insanity, also hyperthyreoidism and tuberculosis. In the school medical service they believed that types of entrant teachers were recognizable, who were more prone to break down than others, but the tests for this susceptibility were as yet inadequate. While the Education Department was doing its best to eliminate these students who showed liability to suffer from "over-pressure," the University accepted them for lectures, thus furnishing an excellent "control" experiment. He especially asked for some more adequate treatment, if possible, of women teachers suffering from neurasthenia and hysteria. This reached a maximum about forty to forty-five years, the period of an early menopause. Treatment in general was disappointing. These cases appeared to him suitable for exhibition of multiglandular preparations, such as "Hormotone," to make up the probable deficiency of ovarian hormone. Under similar conditions different people displayed very different degrees of emotion and the like and the marked degree of sex limitation was undoubted. It seemed to him that the endocrine organs should receive more attention.

DR. H. C. ADAMS referred to Dr. Lidwill's last patient and spoke of his own experience of a similar condition. After careful examination he had arrived at the conclusion that the patient was suffering from auto-intoxication from a septic tonsil. The tonsil had been removed and the patient had improved to some extent. This patient had two unerupted impacted teeth. Dr. Adams wished to know whether Dr. Lidwill did not think that the reflex irritation caused by such a condition might have a large bearing on such a case.

In his reply DR. LIDWILL thanked those who had criticized his paper and particularly Sir John Macpherson. He did not approve of treating patients at first by hypnosis and later by psycho-analysis. The hypnosis often led to an increase in suppression. Referring to Dr. Harvey Sutton's remarks on teachers who were supposed to be suffering from anæmia. In some of these cases the red blood cell count amounted to 4,700,000. These girls were working too hard and had what he termed "jerry-built" nervous systems. Replying to Dr. Adams, he stated that he did not think that unerupted teeth could produce the symptoms described.

Deep X-Ray Therapy.

DR. B. J. M. HARRISON read a paper entitled "Deep X-Ray Therapy for Inoperable Malignant Disease" (see page 62).

DR. E. H. MOLESWORTH thanked Dr. Harrison for his interesting paper. He stated that the chief difficulties were, as Dr. Harrison had demonstrated, in the preliminary work necessary for the purpose of obtaining the desired doses delivered to the region of the pathological process. It was very important that the portals of entry and the depth doses should be properly plotted out. In referring to the dangers associated with high-voltage currents in radiology, Dr. Molesworth admitted that perhaps these were not great as far as the patient was concerned. Radiologists were at pains to render their working safe and comfortable. In his own rooms he had noticed that more or less uncontrolled secondary radiation sufficed to enable him to see the shadow of his own hand. When he had discovered this, he had installed a leaded wall and had taken many other precautions for the protection of himself and others working for long periods in the neighbourhood of the X-ray plant.

He had not used codeine, but had tried morphine during the irradiation to check the vomiting. The strain on the patient was very great. Many of them felt faint and sick at the end of the session and it was often necessary to support them to get them into a cab. He was very glad to hear that Dr. Harrison did not produce an erythema on the second day. He would be very nervous if any patient of his manifested an erythema at so early a date. He had seen it on the fifth day, but regarded this as two days too early. It was usually necessary to produce an erythema except when it was possible to deliver to the growth a full dose without subjecting any area of the skin to more than two-thirds of the erythema dose.

In dealing with the types of growths suitable for this form of treatment, Dr. Molesworth gave the first place to the sarcomata. Growths in the iliac region had responded well; he had also had success in the upper portion of the pharynx. In one case the tumour had disappeared completely. In two others the growth had almost disappeared, while a fourth patient was progressing well. The second class of tumour was cancer of the breast. He had obtained excellent results except when secondary nodules were present in the liver. He admitted that his experience was not sufficient to justify him in dogmatizing as to which of these cases were the most suitable for X-ray therapy. Serious consideration should be given to the question whether radiation should be tried before, after or in the place of operation in cases of sarcoma. If the surgeon, the radiologist and the pathologist would work in team, it would not be long before they would arrive at a reliable conclusion as to which form of treatment should be utilized in any given case. He was satisfied that pre-operative radiation should be carried out under certain conditions. It had been shown that the cells, even if they were not killed, became less liable to be transplanted after radiation than before. The post-operative use of X-rays needed no advocacy. A considerable amount of ill-feeling had entered the controversy between the supporters of surgical treatment, of radiotherapy and of other forms of physical treatment. He was afraid that this ill-feeling would continue for some time longer. It was highly desirable that the radiologist and the surgeon should consult frequently. It was also necessary for the profession to realize that tremendous advance had been made in the last few years in the treatment of malignant disease. At the present time more than ever before it was essential that they should aim at efficiency and accuracy.

DR. R. GORDON CRAIG thought that Dr. Harrison had given them an excellent *résumé* of the position. But, like all enthusiasts, he had displayed many of the roses and few of the thorns. Dr. Harrison had been frank in that he had not claimed that X-ray treatment did good in every case. He had admitted failures. In regard to the dangers to the patients, he would state it as an axiom that if a patient could not be improved by treatment, he should not be made worse. In some cases where burns had resulted the effects had been appalling. Dr. Harrison's methods rendered the treatment like a problem in navigation. The radiologist had a great responsibility when he was engaged in working out the lethal dose to be delivered to a cancer of the uterus or of the rectum. The difficulties were enhanced when an important organ lay in immediate relation to the tissue to be irradiated. Scientific accuracy was essential in the working out of the dose. Some surgeons had reported that the results of these heavy doses had been sloughing of the rectum, bladder and other organs. He, Dr. Craig, had not seen a case of deep X-ray burns, but had seen burns of the bladder and rectum produced by radium used for cancer of the prostate. The sufferings of the patient had been dreadful. He thought that there was a great danger of over-enthusiasm. X-ray treatment would, in his opinion, not prove a panacea for cancer and he felt convinced that in the treatment of straight-forward cases there was no justification for giving up surgery.

He recognized that there had been a remarkable advance in technique within recent times. The introduction of a uniform sphere gap had obviated the necessity of much guesswork. Professor Laby, when organizing the radiological outfits during the war, had utilized sphere gaps and in this way had enabled the radiologist to standardize the dosage. In conclusion, Dr. Gordon Craig asked Dr. Harrison whether use was being made of the ionization chamber as a means of measuring the doses.

DR. H. BULLOCK said that the basis of all treatment of new growths should be determined by the pathological findings disclosed by the microscope. Sir Alexander MacCormick, a close student of surgical pathology for forty years or more, was still to some extent dependent on the findings of the expert pathologist. How could the radiolo-

gist hope to convince them with his results, unless a thorough pathological examination were first made. In abdominal work they were always encountering big surprises. In his own clinic he remembered the condition of two debilitated old men between the ages of sixty and sixty-five years in whom he had performed gastro-enterostomy as a preliminary to partial gastrectomy for what appeared clinically to be an obvious malignant growth. When the abdomen had been opened a month later, the growth had disappeared. In June, 1920, he had shown a man at the Sydney Hospital at a clinical meeting of the Branch who had been operated upon by him for intestinal obstruction and later who had had the splenic flexure and descending colon removed for a clinically obvious ring carcinoma of the bowel. The case had been recorded in THE MEDICAL JOURNAL OF AUSTRALIA (July 17, 1920, page 67). The growth had subsequently been examined by Dr. Walton Smith and had been found to be inflammatory. The man was alive and in the best of health. Dr. Bullock stated that X-ray findings might suggest bowel obstruction, but that it was not possible to localize the obstruction accurately by means of X-rays. The obstruction reported to be at the hepatic flexure was often found in the transverse colon, near the splenic flexure. This was due, no doubt, to the great mobility of the transverse colon. He mentioned this fact in order to point out that deep therapy applied to abdominal growths might be fraught with inaccurate localization and thus do incalculable harm to healthy structures. In the Out-Patients Department of the Sydney Hospital he had often demonstrated to students a growth with all the clinical characters of malignant disease which proved on pathological examination to be inflammatory. In these cases the patients usually denied all knowledge of infection with syphilis and their blood serum did not yield a Wassermann reaction, even after a provocative dose of some arsenical compound; at times they had a family of healthy children. Yet, with the adoption of anti-syphilitic measures, the growth disappeared and the patient had remained well. From his extensive experience in the Out-Patients Department of the Sydney Hospital he had been led to believe that irritable ulcers of nervous origin were met with in the buccal cavity which might have been regarded as carcinomatous, if proper investigation had not been made.

Dr. Bullock thought that it would be of great value if an investigation on scientific lines could be carried out in selected cases to determine the value of deep therapy. Such an investigation would be of use to surgeons who performed large, mutilating operations which, though repulsive, involved fascinating dissections. He claimed, however, that the final results of these operations often justified the means. He expressed the opinion that they were indebted to Dr. Harrison for his pluck and enterprise in setting up so expensive an apparatus and for his excellent paper. In regard to the patient referred by Dr. Kirkland to Dr. Harrison, Dr. Bullock said that he had seen him in consultation. The growth had been an ulcerating one involving the soft palate, the pillars of the fauces and the tonsils. He had not been satisfied that it was malignant and had suggested the removal of a small portion for microscopical examination. The patient had disappeared. Dr. Bullock regretted that this patient had been included among those "cured of new growth," as he suspected that the ulceration was inflammatory in origin.

DR. W. B. DIGHT congratulated Dr. Harrison on his admirable paper. In regard to Dr. Craig's remarks, he thought that every radiologist would admit the need for great caution in the application of full doses.

DR. E. M. HUMPHERY asked Dr. Harrison if he had endeavoured to ascertain the risk of damage to the moving blood in the course of radiation therapy. It was obvious that the whole mass of blood in the body must pass through the area exposed to the rays several times during the course of a long exposure.

DR. T. W. LIPSCOMB, in closing the discussion, thanked Dr. Harrison for his valuable contribution. He was prepared to admit that deep X-ray therapy was an ally to surgery, but he could not believe that it should be used instead of operative measures in all cases of malignant disease. He thought that the risk of destructive changes in the blood were real.

In his reply, DR. HARRISON stated that Case, of Battle Creek, had examined the blood of many patients before, during and after exposure to X-rays. He had been unable to detect any sustained changes. Moreover, he, Dr. Harrison, had not seen an extreme anæmia result from exposure. Some German observers had reported destructive changes of the blood after long exposures, such as seventeen hours, to doses delivered by a low power machine. The same dose could be delivered in from three to four hours with the aid of powerful machines such as his own. He thought it was necessary to take great care of the patients and he was satisfied that the employment of exhaust fans was highly advisable. He agreed with Dr. Edwards that it was necessary to install these high voltage machines in hospitals, at all events during the experimental stage. He agreed with Dr. Bullock that a scientific investigation was highly desirable. In regard to the ionization chamber, he pointed out that this was used in a bowl of water for making the charts. He expected to have one of these chambers within a short time. He thought that the electrostatic units were the reliable means of determining the erythema dose. The most accurate was the spectroscopic method, which depended on the fact that the degree of refraction varied with the wave length. He recognized that much work had still to be done before the value of deep X-ray therapy could be assessed and he was endeavouring to enlist help and sympathy.

CORRIGENDUM.

DR. E. MARJORY LITTLE calls our attention to the fact that the descriptions attached to Figures II. and III. of her article, "Dysentery: Bacillary and Amœbic" (see THE MEDICAL JOURNAL OF AUSTRALIA, January 6, 1923, page 3), have been transposed in error. The left hand figure depicts a portion of intestine affected with chronic bacillary dysentery, while the right hand picture is that from an acute infection.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected as members of the Victorian Branch of the British Medical Association:

CAMPBELL, RODERICK ALFRED, M.B., B.S., 1922 (Univ. Melbourne), Goroke.

ENTICKNAP, CHARLES ROY, M.B., B.S., 1922 (Univ. Melbourne), Armadale.

HUGHES, FLORENCE MARJORIE, M.B., B.S., 1922 (Univ. Melbourne), 34, Hopetoun Street, Elsternwick.

MEAGHER, EDWIN THOMAS, M.B., B.S., 1922 (Univ. Melbourne), 1035, Drummond Street, North Carlton.

Public Health.

THE CONTROL OF HEALTH IN VICTORIA.

THE COMMISSION OF PUBLIC HEALTH IN THE STATE OF VICTORIA has issued a report of considerable importance. It will be remembered that the *Health Act, 1919*, first became operative on March 24, 1920. This measure embodies many provisions that are new, or at all events new to Victoria. The report bears the date "1922," but there is no announcement indicating the period it is intended to cover. From the text, however, it would appear that the Commissioners endeavour to record the development of remodelled work of public health administration from the time of the coming into force of the Act to the end of June, 1922.

Administrative Machinery.

One of the first tasks of the Commission was to organize the control on a definite plan. The State was divided into six health districts—the Central, comprising an area extending about forty miles around the General Post Office in Bourke Street, Melbourne, the North-Eastern, the Eastern, the North-Central, the North-Western and the Western.

The next step was to secure the services of competent medical hygienists as District Health Officers to act as the representatives of the Commission in the several districts. The positions were advertised at a salary of £700 a year, but no registered medical practitioners applied. After the invitations had been repeated with the same result, the salary was increased to £850 and applicants appeared. Dr. J. Johnston was appointed to the Central District; Dr. G. E. Cole was given the Western District; Dr. C. P. Rowan was selected for the North-Central District; Dr. R. W. Telford secured the position in the North-Western District. District Health Officers have not yet been appointed in the two remaining districts. The duties of these officers are defined as follows: (*a*) To advise and assist medical officers of health and inspectors of councils, (*b*) to carry out medical inspection and the promotion of the health of school children, (*c*) to ascertain by inspection and inquiry the health and sanitary circumstances of the health area and to report on the same to the Commission and (*d*) to confer with councils and discuss matters relating to the public health.

Three Assistant Health Officers were next appointed. Dr. C. H. Johnson was appointed to supervise and control the venereal diseases work; Dr. C. R. Merrillees was created lieutenant to Dr. J. Johnston in the Central District, while Dr. N. H. Featonby was placed in charge of the work of controlling the notifiable diseases, including tuberculosis, and of industrial hygiene.

The next task was to find medical officers of health to carry out the work under the auspices of the local councils. A difficulty arose in this connexion. Some councils revealed no interest in the improvement of the health conditions in the districts and consequently sought to secure the services of medical practitioners at absurd rates of remuneration. Complaints were received by the Commission. It will be within the recollection of readers that a letter was received from the Secretary of the Commission by the Council of the Victorian Branch of the British Medical Association in September, 1922, to the effect that the Commission could do no more than bring to the notice of the municipal councils the necessity of offering reasonable remuneration to medical officers of health. It was the fault of the practitioners accepting appointments at low salaries, if this remuneration was not adequate. In several instances substantial increases were granted. The Commission advised that the remuneration should be based on the size of the population and the extent of the district. Medical practitioners should remember that the law has imposed on the municipal councils the duty of engaging the services of competent medical officers of health. If the salary offered is insufficient, applications should not be made. At the same time, the Council of the Victorian Branch should be requested to inform the municipal councils the amount of salary that should be paid to the medical officers of health of the districts concerned.

The appointment of sanitary inspectors (unreasonably called "health inspectors," notwithstanding the fact that modern hygiene is not merely a matter of house drains and the collection of garbage) has entailed much difficulty. Apparently persons with little or no real training have been given certificates of competency, because the Act provides that every inspector who had held the position of inspector for a period of five years prior to the commencemnet of the Act, should be granted these certificates.

Sanitary Control.

It is a provision of the Act that every city or town council must secure the proper collection, removal and disposal of house and trade refuse, while borough and shire councils may be required to carry out this duty. It appears that garbage is frequently collected in unsuitable receptacles. The Commission urged the municipal councils to remedy this evil and some improvement has resulted. It is to be hoped that if a polite request is ignored by a council, the Commission will adopt stern measures and brook no delay in compliance with the demand for safe disposal of garbage. The "tip" is mildly damned by the Commission. It is inconceivable that a municipal council should be permitted to create breeding grounds for flies and other dangerous insects in populous areas. The erection of destructors in Melbourne, Prahran, Richmond and St. Kilda and of a common one for Kew, Hawthorn, Malvern and Camberwell indicates that some councils recognize their responsibilities to the public. The Commission hopes that the example set by these councils will stimulate the councils of other large municipalities to emulate it. If the Commission relies on hopes, its achievements will be of small value.

It appears that the Act is defective in regard to the collection, removal and disposal of night-soil in the metropolitan area of Melbourne. The Commissioners recognize the difficulties surrounding this matter, but have much advice to offer to the municipal councils. The sealed pan system associated with adequate earth burial of night-soil shoulu not be impossible of attainment, even in close proximity to populous districts. The only difficulty is that of compelling the local authority to carry out its obligations. The secret of success of a health authority lies in the energy with which it compels municipal councils to obey its dictates.

Sewerage schemes have been adopted and the work has been commenced in Geelong, Bendigo and Ballaarat and the Colac Council has a scheme under consideration.

Water Supplies.

A grave weakness of the position of the Commission is disclosed in the chapter dealing with the pollution of water supplies. It is admitted that the catchment areas and the reservoirs must be protected against contamination. It is further admitted that gross pollution actually occurs over the greater part of the Coliban area which supplies Bendigo. But the Commission has no funds to remedy this appalling menace to the public and has not even the means to initiate bacteriological and chemical examination of the water. It has frequently been pointed out in these columns that the preservation of health costs money, but that disease is much more expensive. The Commission is not justified in accepting the position of being aware of a grave danger and permitting it to continue because it has no funds. Parliament must be made to accept the responsibility for this neglect, if it refuses to provide the money for its removal.

Offensive Trades and Nuisances.

Some interesting information is given in connexion with offensive and dangerous trades, nuisances and the like.

Infective Diseases.

The Act provides that the municipal councils shall furnish accommodation for and treatment of persons suffering from certain infective diseases. The metropolitan councils in combination maintain the Queen's Memorial Infectious Diseases Hospital at Fairfield with six hundred beds. It is pointed out that this hospital could not accommodate all patients needing treatment in the event of a serious epidemic. A suggestion has been made by the Commission that the buildings of the Australian General Hospital at Caulfield should be acquired as an additional and emergency hospital for persons suffering from notifiable diseases. A conference of the metropolitan councils was held at which this subject was considered. It appears that no definite decision was reached. In the rural districts, provision has been made for the admission of these patients to isolation wards in local hospitals.

Diphtheria.

The incidence of diphtheria in Victoria is high. In 1910 the notification figures revealed that 2,415 persons were infected. In 1921 the figure was 9,458. Between 1911 and 1920 the notifications have varied within the limits of 4,092 and 6,568. The death-rate from diphtheria per hundred thousand of population remained at one level from 1910 to 1916. There was then a fall from 4.94 to 3.21, with a rise in 1919 to 5.26. In 1920 it was 4.27 and in 1921 it was 2.9. Whether the striking rise in the number of infections notified in 1921 was actually an increase in incidence or merely an increase in the recognition and notification is difficult to prove. The number of deaths from this disease has increased steadily and slightly since 1911, with the exception of one year, 1917.

Some interesting experiments were carried out at Tallangatta and at Bendigo. Owing to the high incidence at both places, the assistance of the Health Commission was sought. The throats of the school children were examined bacteriologically by swabbing and culture and "car-

riers" of diphtheria bacilli were isolated. The immediate effect was a sudden fall in the number of children infected. No mention is made of any use of the Schick test or of toxin-antitoxin immunization of susceptible persons. It is a pity that the full significance of the Bendigo investigation is not given. The period of control was from March 1, 1922, to May 31, 1922. The notification figures and number of patients admitted to the hospital are grouped for the six months to June 30, 1922, and compared with the corresponding period of 1921. The figures from April onward would be more interesting.

Enteric Fever.

Very sparse information is given in regard to the incidence and control of enteric fever. That the death-rates from this disease were appallingly high between 1870 and 1890 is historical. The introduction of water-borne sewerage systems and the endeavour to solve the night-soil problem resulted in an arrest of this deplorable state of affairs. The decrease in the incidence continued until 1910. Since that year the number of notified infections has diminished gradually until 1918 and has fluctuated since. From 1916 onwards the case mortality has increased in a singular manner. Enteric fever is a disease that can be prevented. In a city it should not exist, while in small towns and in rural districts a vigilant control should suffice to keep it from assuming serious proportions. There is still much to be done to eliminate this preventible disease from Melbourne.

Scarlatina.

From a table published in the report, it is seen that scarlatina is becoming more prevalent than formerly. It is a disease of diminishing mortality in the State at present. No indication is given of any steps adopted to endeavour to cope wth this disease. It may not always have a low case mortality.

Tuberculosis.

The Commissioners have drawn up a sound plan of campaign for the combating of tuberculosis. This plan is a modification of the Edinburgh plan of Sir Robert Philip. It involves notification both of infection and of removal of the person infected to another place. The contacts should be systematically examined and all persons liable to serve as a source of infection should be removed to sanatoria. Facilities should be provided for early diagnosis and the services of physicians with special training should be available. There should be a registration depôt. Infected persons, especially those living in unhygienic surroundings, should be sent to a reception sanatorium. After a time the patient should be transferred to an industrial sanatorium or to a sanatorium for persons with tuberculosis in an advanced stage. Special sanatoria should exist for persons able to pay a moderate fee and for children. The scheme also provides for receiving wards in general hospitals for persons acutely ill with tuberculosis, prior to transfer to a sanatorium. Boarding-houses where infected persons could carry out what is termed "tuberculosis hygiene," are also commended. Lastly, a good outline of educational propaganda is given.

The Commission finds that it may not be possible at present to adopt this scheme in its entirety. It is therefore proposed that one hundred additional beds be provided for persons in the advanced stages of the disease. There are at present one hundred and forty-six beds. An industrial sanatorium with two hundred beds is required. The McLeod Sanatorium should be reserved as the receiving sanatorium. If the Greenvale Sanatorium is to be used, extensive alterations, repairs and additions are necessary. Sixteen beds should be reserved at one of the general hospitals. The cost should be born by the State and not by the municipalities.

The Commission.

A number of other matters are dealt with in the report. The Commissioners conclude with a pathetic appeal for consideration and assistance. They have, as a Commission, neither legislative powers to carry out measures calculated to safeguard the public health nor any control of funds. All they can do is to pass resolutions which may or may not be adopted by the Department. They desire to have a voice in the framing of the estimates of the Department of Health. They want many things to render themselves an effective body to protect the health of the community. It would seem that the administrative principles included in the Act are scarcely better than those of the previous Acts. The old Boards of Health had their hands tied and were incapable of effecting real good. If the present Commission is to survive, it must demand power and money to institute the essential reforms. If Parliament refuses to grant these powers and moneys, the Commission should unload its responsibility and let others accept it. It appears to us, however, that even if the Commission were endowed with powers to act and money to spend, it would still have an almost insuperable difficulty to overcome, namely, the task of compelling unwilling municipal councils to carry out all the duties imposed on them by the Act.

Naval and Military.

APPOINTMENTS.

THE following appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, No. 109, of December 21, 1922:

Australian Military Forces.

FIRST MILITARY DISTRICT.

Australian Army Medical Corps.

LIEUTENANT (provisionally) B. L. W. CLARKE is transferred to the Australian Army Medical Corps Reserve and to Honorary Lieutenant, 1st July, 1922.

CAPTAIN (provisionally) WALTER HENRY STEEL is transferred to the Reserve of Officers and to be Captain, 1st September, 1922.

Australian Army Medical Corps Reserve.

LIEUTENANTS (provisionally) B. H. QUIN and E. W. CHENOWETH are transferred from the Australian Army Medical Corps, Third Military District, and to be Honorary Lieutenants, 1st October, 1922.

SECOND MILITARY DISTRICT.

Reserve of Officers.

CAPTAIN L. P. BRENT is transferred from the Reserve of Officers, Third Military District, 1st November, 1922.

Australian Army Medical Corps Reserve.

THE resignation of HONORARY CAPTAIN W. B. DIGHT of his commission is accepted, 25th October, 1922.

Australian Army Medical Corps.

MAJOR C. H. E. LAWES is appointed to command the Fourteenth Field Ambulance, 1st August, 1922.

MAJOR A. C. ARNOLD is appointed to command the First Field Ambulance, 1st July, 1922.

CAPTAIN W. R. C. BEESTON is appointed to command the Second Cavalry Field Ambulance, 1st September, 1922.

MAJOR W. VICKERS, D.S.O., is transferred to the Unattached List, 1st November, 1922.

THIRD MILITARY DISTRICT.

Australian Army Medical Corps.

MAJOR E. CHAMPION is transferred to the Reserve of Officers, 16th October, 1922.

LIEUTENANT (provisionally) L. W. JOHNSTON is transferred to the Reserve of Officers and to be Captain, 1st July, 1921. (This amends the notification respecting this officer which appeared in Executive Minute No. 408/1921, promulgated in *Commonwealth of Australia Gazette*, No. 79, dated 15th October, 1921).

LIEUTENANTS (provisionally) B. H. QUIN and E. W. CHENOWETH are transferred to the Australian Army Medical Corps Reserve, First Military District, and to be Honorary Lieutenants, 1st October, 1922.

MAJOR W. G. CRAIG, D.S.O., is appointed to command the Second Field Ambulance, 1st July, 1922.

LIEUTENANT (provisionally) O. R. TRUMPY is transferred to the Australian Army Medical Corps Reserve and to be Honorary Captain, 12th October, 1922.

Reserve of Officers.

CAPTAIN L. P. BRENT is transferred to the Reserve of Officers, Second Military District, 1st November, 1922.

THE notification respecting the grant of the substantive rank of Captain to LEONARD WALTER JOHNSTON, which appeared in Executiv eMinute No. 208/1921, promulgated in *Commonwealth of Australia Gazette*, No. 53, dated 16th June, 1921, is cancelled.

Australian Army Medical Corps Reserve.

THE resignation of HONORARY CAPTAIN J. F. SPRING of his commission is accepted, 16th October, 1922.

FOURTH MILITARY DISTRICT.

Australian Army Medical Corps.

CAPTAIN C. T. TURNER, M.C., is transferred from the Unattached List, 1st November, 1922.

CAPTAIN J. P. O'BRIEN is transferred to the Unattached List, 1st November, 1922.

Correspondence.

SPIRITUAL HEALING.

SIR: While I agree that "delays have dangerous ends," at the same time I must protest against your coupling the above with Eddyism, Chinese herbalists *et cetera*. Mr. Hickson is not setting forth any new "ism," nor is he seeking any pecuniary benefit. I believe in a Supreme Power, who is omniscient; there are more wonderful things in our world and in those around us than the mere healing of a pathological condition. Creation itself is surely more marvellous than restitution or reformation.

You write as if microscope findings were infallible and yet I know of several cases where it was incorrect. All we know is so finite and inexact that he is a bold man who would limit the powers of the Infinite.

Yours, etc.,

W. KENT HUGHES.

22, Collins Street, Melbourne,
January 9, 1922.

THE TONSILS CONSIDERED BY A GENERAL PRACTITIONER.

SIR: If I did not know Dr. O'Day very well, I might suspect him of "leg-pulling." The evidence of benefit from tonsillectomy is so great and increasing in volume that it is only a waste of time defending it. Let me deal with his objections:

(1) Multilation. Is it more than a circumcision in the "best hands," especially when the anterior pillar is carefully preserved?

(2) Deaths from hæmorrhage. Does he know of any in Melbourne, excepting at the hands of those who use a Redpath guillotine?

(3) Abscess of the lung. Does he know of any cases in Melbourne?

I am not emphasizing Melbourne from any other reason than possibility of first-hand investigation. When I had a controversy about the danger of hæmorrhage from tonsillectomy, cases were brought forward from Bulgaria and Timbuctoo of division of the internal carotid and so forth.

(4) As regards its function. A healthy tonsil may be of value, but there is plenty of lymphoid tissue to take its place. A diseased tonsil is certainly a danger, so might I say in passing is a partially removed tonsil.

Yours, etc.,

W. KENT HUGHES.

22, Collins Street, Melbourne,
January 9, 1922.

PSYCHO-THERAPY.

SIR: In reference to the address delivered before the Queensland Branch by Professor Lowson, as reported in your issue of November 25 last, and further to the correspondence from Dr. Halford which followed in your issue of December 9, I would like to state that I had written an answer to Dr. Halford's letter, but withheld it, awaiting a reply from Professor Lowson. This has now appeared and I think is so clear and concise that it ought to quite satisfy Dr. Halford, but I would crave your permission to further amplify Professor Lowson's remarks, as I consider it is quite time the profession as a whole should realize the enormous importance of the study of psychology in its relation to clinical problems.

As Professor Lowson rightly remarks, there is no such thing, strictly speaking, as "the instinct of self-preservation." This is one of the many catch-words or phrases that entangle the unwary and it is one very dear to all anti-Freudians. What is meant by the term "instinct of self-preservation," is not an inherited or innate psycho-physical disposition capable of exerting all the energy of its many powerful components as one unified motive, but it is the phrase applied to a biological category of behaviour for the manifold activities which happen to subserve at certain times and in certain situations the purpose of preserving the life of the organsm, and have nothing in common beyond this result.

Thus, in preserving life, fear and anger may have as much to do at times as the nutritional impulses and yet they are quite independent dispositions and even incompatible with the nutritional impulses.

But the sex instinct is a true inherited or innate psycho-physical disposition, the gratification of which in some manner, either in sublimated or pure form, the whole of nature strives to perform, man alone of all seeking to repress and deny its far-reaching influence and this at the peril of his peace, which all know who will only look at the facts without prejudice.

Freud does not deny the influence of the tendencies subserving the preservation of life. These are included under his *ego* instincts and it is just the conflict between these and the sexual trends that products the psycho-neurosis; but the trouble is that some of these "*ego* instincts," these repressing forces, are built on foundations of human reason which may have been faulty. I have satisfied myself in all cases of psycho-neurosis that I have seen that a repressed sexual factor was the central cause and that until it was unearthed and explained no cure resulted.

In conclusion, I may mention, in very rough fashion, that Freud in his latest works contracts the *ego* instincts with the sex instincts, the former as "death instincts," the latter as "life instincts." Surely it is time that the profession looked at the sexual instinct with broader vision and more inquiring impartiality, instead of trying to hide it or put it behind such phrases of the "instinct of self-preservation."

Yours, etc.,

PAUL G. DANE.

80, Collins Street, Melbourne,
January 9, 1923.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned have been registered, under the provisions of the *Medical Act of 1867*, as duly qualified medical practitioners:

MATTEI, CHARLES, L.R.C.P. *et* S. (Edin.), L.F.P.S. (Glasg.), L.M., 1888, D.P.H., R.C.P. *et* S. (Dublin), 1907, Repatriation Hospital, Brisbane.

OLIPHANT, MARIE CLAIRE, M.B., 1920 (Univ. Sydney), Lady Bowen Hospital, Brisbane.

Additional Registration.

SAMUELSON, GERALD SEPTIMUS, M.D., 1893 (Univ. Edinburgh).

Books Received.

AN INTRODUCTION INTO THE PRACTICE OF PREVENTIVE MEDICINE, by J. G. Fitzgerald, M.D., F.R.C.S., assisted by Peter Gillespie, M.Sc., C.E., M.E.I.C., and H. M. Lancaster, B.A.Sc., and chapters by Andrew Hunter, M.A., M.B., F.R.C.S., J. G. Cunningham, B.A., M.B., D.P.H., and R. M. Hutton; 1922. St. Louis: C. V. Mosby Company; Royal 8vo., pp. xx. + 826, with 129 illustrations. Price: $7.50 net.

COLOUR VISION, by W. Peddie, D.Sc., V.P.R.S.E.; 1922. London: Edward Arnold & Company; Demy 8vo., pp. xi. + 208, with 30 figures. Price: 12s. 6d. net.

GYNECOLOGICAL TREATMENT, by A. H. F. Barbour, M.D., LL.D., F.R.C.P.; 1922. Edinburgh: W. Green & Son, Limited; Sydney: Angus & Robertson, Limited; Demy 8vo., pp. xii. + 111, with four coloured plates and sixty-nine figures in the text. Price: 9s. net.

HISTORY OF THE GREAT WAR BASED ON OFFICIAL DOCUMENTS.—MEDICAL SERVICES: SURGERY OF THE WAR, in two volumes, edited by Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D., Major-General Sir A. A. Bowlby, K.C.B., K.C.M.G., K.C.V.O., Major-General Sir Cuthbert Wallace, K.C.M.G., C.B., and Colonel Sir Crisp English, K.C.M.G.; Volume II.; 1922. London: His Majesty's Stationery Office; Demy 8vo., pp. vii. + 604, with seven coloured plates and numerous full-page and other figures. Price: 25s. net.

MONOGRAPHS ON BIOCHEMISTRY: OXIDATIONS AND REDUCTIONS IN THE ANIMAL BODY, by H. D. Dakin, D.Sc., F.I.C., F.R.S.; Second Edition; 1922. London: Longmans, Green & Company; Royal 8vo., pp. ix. + 176. Price: 6s. net.

PHYSICAL EXERCISES FOR INVALIDS AND CONVALESCENTS, by Edward H. Ochsner, B.S., M.D., F.A.C.S.; Second Edition; 1922. St. Louis: C. V. Mosby Company; Crown 8vo., pp. 56, with 42 figures. Price: 75 cents.

PHYSIOLOGIE NORMALE ET PATHOLOGIQUE DU FOIE, par le Docteur G. H. Roger; 1922. Paris: Masson et Cie; Royal 8vo., pp. 400, with 16 figures. Price: Frs. 22 net.

PRÉCIS DE PARASITOLOGIE, par E. Brumpt; Troisiéme Édition, entièrement remaniée; 1922. Paris: Masson et Cie; Crown 8vo., pp. xv. + 1,216, with 736 figures, of which 302 in the text and five plates are in colour. Price: Frs. 50 net.

SAMMLUNG ZWANGLOSER ABHANDLUNGEN AUS DEM GEBIETE DER VERDAUUNGS- UND STOFFWECHSELKRANKHEITEN; MIT RÜCKSICHT AUF ALLGEMEINÄRZTLICHE INTERESSEN, herausgegeben von Professor Dr. H. Strauss in Berlin;[1] 1922. Halle an der Saale: Carl Marhold Verlagsbuchhandlung.

VIII. Band, Heft 1: Die Behandlung der Tuberkulösen Bauchfellerkrankungen im Kindesalter, von Professor Dr. H. Finkelstein und Dr. F. Rohr, Berlin; Demy 8vo., pp. 35. Price: About 7d..

VIII. Band, Heft 2: Neuere Anschauungen vom Wesen des Ulcus Pepticum, Ventriculi und Duodeni, von Dr. B. Gruber und Dr. E. Kratzeisen, Mainz; Demy 8vo., pp. 43. Price: About 9d..

VIII. Band, Heft 3: Die Durch Tierische Parasiten Hervorgerufenen Chirurgischen Erkrankungen der Bauchhohle, von Professor Dr. Hermann Kehl, Marburg; Demy 8vo., pp. 42. Price: About 9½d..

Medical Appointments.

DR. A. C. MCARTHUR has been appointed Visiting Surgeon to the Gaol at Grafton and Medical Officer in Charge of the Lock Hospital at Grafton Goal, New South Wales.

* * * *

DR. E. C. HALL (B.M.A.) has been appointed Visiting Surgeon and Dispenser at the Parramatta Goal, New South Wales.

Medical Appointments Vacant, etc..

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii..

NEWCASTLE HOSPITAL, NEW SOUTH WALES: Medical Superintendent and Assistant Medical Superintendent.

ROYAL AUSTRALIAN NAVY: Vacancies for Medical Officers.

[1] Collection of Independent Works on the Subject of Digestive and Metabolic Diseases, with Special Reference to Their General Medical Significance, edited by Professor Dr. H. Strauss, Berlin.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Societies' Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phœnix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B. M. A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

JAN. 24.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
JAN. 25.—Brisbane Hospital for Sick Children: Clinical Meeting.
JAN. 26.—Queensland Branch, B.M.A.: Council.
JAN. 27.—Northern District Medical Association, New South Wales: Glen Innes.
JAN. 31.—Victorian Branch, B.M.A.: Council.
JAN. 31.—Western Medical Association, New South Wales: Orange.
FEB. 2.—Queensland Branch, B.M.A.: Branch.
FEB. 7.—Federal Committee of the British Medical Association in Australia.
FEB. 8.—Federal Committee of the British Medical Association in Australia.
FEB. 8.—Victorian Branch, B.M.A.: Council.
FEB. 9.—Queensland Branch, B.M.A.: Council.
FEB. 13.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 14.—Victorian Branch, B.M.A.: Branch.
FEB. 14.—Western Australian Branch, B.M.A.: Council.

Editorial Notices.

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